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A SURVEY OF THE INCIDENCE OF TÆNIA SAGINATA INFESTATION IN THE POPULATION OF THE STATE OF VICTORIA FROM JANUARY, 1934, TO JULY, 1935.

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MAN is the only known host of *Tænia saginata*. For man to become infested, he must ingest the living larval stage of the worm, which is found only in some member of the ox family. This larval stage is called *Cysticercus bovis*, and beef containing it is spoken of as "measly beef".

Because of the presence of "beef measles" in cattle grazing on a farm irrigated with untreated sewage, we were commissioned to investigate the possibilities of its control. Among the methods considered of reducing the number of viable *Tænia saginata* ova reaching the pastures were the tracing and treatment of cases of *Tænia saginata* infestation. Because there was a big economic stake involved, it was possible for us to use very searching, exhaustive, and even expensive methods for tracing cases.

As a knowledge of the methods employed for obtaining the incidence of any disease is of the utmost importance in assessing the statistical value of the supposed incidence, we will briefly detail those used for tracing the cases of *Tænia saginata* infestation.

(1) Inquiries were made amongst the pathological and clinical staffs of all the Melbourne metropolitan public hospitals. Only one patient had presented herself for treatment during the period under consideration. However, four uncured cases were

traced amongst several persons who had attended during the previous ten years.

(2) A *questionnaire* and a prepaid reply envelope were sent to all the Victorian medical men and pharmaceutical chemists. Before replies were received it was necessary to send the *questionnaire* on three occasions to some of these gentlemen. Those city and suburban doctors and chemists who had not replied were communicated with where possible by telephone. Finally, replies were received from 92% of the medical practitioners and 95% of the chemists. Those who did not reply were mainly residents of remote country districts or not engaged in active work. Almost all persons who reported cases were good enough to give confidentially the names of the patients, so that repeated notifications of individual cases could be detected and the records corrected. In addition, the evidence on which the diagnosis had been made was discussed, and when the diagnosis was satisfactory great efforts were made, with the consent of the notifiers, to trace the patients. The results, however, were rather disappointing, as many supposed cases could not be traced because of inadequate records. By this means approximately twenty uncured cases came to our notice.

(3) On July 4, 1934, tapeworm infestation (with *Tænia saginata* or *Tænia solium*) was proclaimed a compulsorily notifiable disease. Apart from the cases we notified, only two were reported in the ensuing twelve months. These two cases are not included in our totals, as we have not made contact with the patients.

(4) An offer of £5 reward for each complete tapeworm and free treatment for indigent patients were advertised sixteen times in conspicuous positions in the public Press. So that a diagnosis could readily be made by anyone, the following statement was included in the advertisement: "Several pieces of the worm appear almost daily in patients infested with tapeworm. The pieces are white and tape-like, measuring approximately one inch by one-quarter of an inch." As a result of these advertisements fifteen additional cases were obtained.

(5) Circulars were printed advertising the offers of £5 reward for a complete tapeworm and £1 commission for any person bringing a case of tapeworm to our notice for the first time. The circulars also contained a natural-sized photograph of ripe segments of *Tænia saginata* and statements regarding the method of diagnosis and the evidence of cure. The diagnosis was given by the following statement: "Every case of tapeworm passes several segments of the worm almost daily, unless several feet have been passed recently, in which case the passage of segments is discontinued for a varying time up to three months." The circulars were sent throughout Victoria to all medical practitioners, all pharmaceutical chemists in independent business, matrons of private hospitals, mental hospitals and receiving houses, superintendents of gaols and reformatories, herbalists, osteopaths, chiropractors, approximately 50% of the Syrian-born population of Victoria, and secretaries of several foreign clubs. These circulars gave the most satisfactory results, and were the means of obtaining the majority of the Syrian patients, who, with rare exceptions, had never previously sought treatment. The £1 commission was a great incentive to a number of Syrians to inquire amongst their fellow countrymen. Similarly it was a satisfactory arrangement for chemists and doctors. Fifty uncured cases were obtained in this manner.

By the use of the combination of these methods we were able to diagnose personally ninety cases of *Tænia saginata* infestation occurring in persons residing in Victoria during the period from January, 1933, to July, 1935. Many more supposed cases were reported as a result of the *questionnaire*, but many could not be traced, while a large number proved to be incorrectly diagnosed. The accompanying table summarizes the number of cases traced by the various methods.

Method.	Number of Cases.
1. Hospital records	5
2. *Questionnaires* to doctors, chemists *et cetera*	20
4. Compulsory notification to the Health Department	2[1]
3. £5 reward advertised in the public Press	15
5. £5 reward and £1 commission advertised by circulars sent to doctors, chemists, Syrians and various public institutions	50
Total	90+2[1]

[1]Not personally diagnosed.

No cases of *Tænia solium* or *Diphyllobothrium latum* infestations were discovered. However, two specimens of *Diphyllobothrium latum* that had been obtained some years previously from Finns who acquired their infestations in Finland were forwarded to us.

Of the ninety persons infested with *Tænia saginata* forty-two were Syrian-born, and these without exception were infested before arriving in Australia, while forty-eight were Australian-born and had acquired their infestation in Victoria from one to twenty years before coming to our notice. Eighty-six of these persons have been treated. Of these, thirty-eight Syrians harboured a total of 135 worms, and forty-eight Australians 51 worms. Nineteen of the Syrians were each infested with only one worm, and the other nineteen each harboured from 2 to 31 worms. Of the forty-eight Australian-born persons, forty-six each harboured only one worm, one harboured two, and one three. With the exception of *Oxyuris vermicularis* (threadworm), no parasite was found associated with *Tænia saginata*.

The population of Victoria during the period under consideration was approximately 1,830,000. Of these 1,620,000 were Australian-born, 377 were Syrian-born, and the remainder were immigrants from thirty-nine different countries. On these figures the frequency of *Tænia saginata* infestation in Victoria during the period from January, 1933, to July, 1935, was therefore 4·9 per 100,000 of the general population, 3·0 per 100,000 of the Australian-born population, and 42·0 in 377, a rate of 11,000 per 100,000, of the Syrian-born population. Amongst the Syrians are included Lebanese.

These results show how inadequate are hospital records and those obtained by compulsory notification

in assessing the incidence of a disease of such a trivial nature as *Tænia saginata* infestation. It will be noted that sixty-five of the ninety cases were obtained as the result of the offer of £5 reward. Some Syrian patients had been infested for fifty to sixty years, and two Australian patients for twenty years, without ever having sought treatment until the reward was offered.

The question now arises, how many cases exist with which we have not made contact? At the present moment it can only be guessed at, but we are of the opinion that most have been located. A rough estimate of the number of cases existing amongst the million persons residing in the metropolitan sewered area can be made by determinining the degree of infectivity of the sewage arriving at the farm. We hope to do this, and if the result of the experiment shows that a large number of cases have not been located, we expect to publish the experiment in detail and allow for the additional cases in the revised incidence.

There were many causes that might have prevented all the infested persons coming to our notice. Amongst these were the following:

1. A patient might have been unaware that he or she was passing segments *per rectum*. This might have been so in some instances for a matter of a few months, but sooner or later segments would actively crawl through the anus and would be found on the underclothing. Also, the publicity given to tapeworm and beef measles during the period under review would probably make a large number of persons examine their stools.

2. The apathy of some patients, even when crawling segments were noticed, might have been another factor. We would expect this to have been present only in a small proportion of working class people. The well advertised £5 reward should have been an incentive to this type of person to seek treatment.

3. The excessive modesty of some women might have prevented them from seeking advice. This type of individual in Victoria would rarely be an eater of raw or almost raw beef, so that the chance of becoming infested would be negligible.

4. Mental deficiency and insanity are other factors. The staffs of mental hospitals and receiving houses have been circularized, but as there is such a great number of mental deficients at large, cases may have been overlooked. However, a number of mental deficients with tapeworm have consulted us, and others have imagined they were infested.

We should like to point out that *Tænia saginata* infestation can never become frequent in Victoria, mainly because of the almost general habit of eating well cooked or only slightly underdone beef. This statement is supported by the infrequency of the disease up to the present in spite of the fact that for the last thirty-five years some beef for the metropolitan market has been fattened on a sewage farm. During the last twenty years more than 100,000 cattle have been fattened on the farm and consumed by the population of Victoria. Although we have proof that beef measles must have existed in some of these cattle, the disease was not detected until September, 1933, mainly because the infestations must have been extremely light, and no special examination was undertaken to find them.

Conclusions.

1. Infestation with *Tænia saginata* is a relatively rare disease in Victoria.

2. The majority of beef tapeworms obtained in Victoria were harboured by the Syrian-born residents, who were infested before arrival in this country. In the future the quarantine policy should be amended to meet this risk.

3. When comparing the efficacy of the different methods used in locating the infested persons, it is readily seen that those methods that provide for adequate payment for service rendered are much more successful than those that depend mainly on the public spirit of the population. The majesty of the law as seen in the notification of cases because of the legal requirements is singularly unimpressive.

4. Probably much public health work is rendered ineffective because no adequate provision is made for the payment of those who are asked to cooperate in the work.

Acknowledgements.

We are indebted to the Melbourne and Metropolitan Board of Works, for which the survey was undertaken, for permitting us to publish this article.

Sincere thanks are also due to the State Health Department, medical practitioners and pharmacists for assisting in the survey. To the President of the Health Office of Germany we are obliged for the suggestion of giving rewards for complete tapeworms.

FRACTURE OF THE LEG BELOW THE KNEE.

By H. SKIPTON STACY, M.D., Ch.M., F.R.A.C.S.,
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IN August, 1932, at a discussion on fractures of the leg below the knee, I remarked that:

> . . . a greater degree of simplicity of treatment was being evolved which would place modern methods at the disposal of a much larger number of practitioners without any sacrifice to the patient. Amongst those contributing to this were surgeons like Watson Jones, of Liverpool, whose method of applying extension to fractures below the knee seemed capable of wide application.

In fractures of the tibia and fibula, if there is no overriding, reduction may be secured by manipulation, followed by the application of a plaster cast (with the limb hanging over the end of the table) in the line of gravity.

But it is the fractures with overriding that have always given trouble and anxiety. This anxiety has been felt most by those surgeons who were not content with moderately good apposition, but who realized that good anatomical position meant a good functional result. The problem has been attacked by general and orthopædic surgeons, using sometimes different methods. I think it would be found on reading the various views that they differ: (i) in

the form of extension used to overcome the deformity, (ii) in the methods of maintaining that extension, (iii) in restoration of the functional use of the limb.

Methods of Extension to Overcome Deformity.

I do not propose to deal with the various methods that have been used, many of which are quite useless in overriding of any degree. Some surgeons are fond of using the orthopædic table and by means of screw traction overcoming the deformity. This is valuable and a vast improvement on traction by hand while plaster is being applied. The Sinclair skate had a great vogue during the War and with some for a time afterwards, but I have never had much success with it in cases of marked overriding. Skeletal traction has become increasingly and deservedly popular; it has proved really effective.

Methods of Maintaining Extension.

I think it is in this that Watson Jones has introduced a great improvement. With the patient anæsthetized on a table, to the latter end of which his splint is clamped (Figure I), he passes a stout

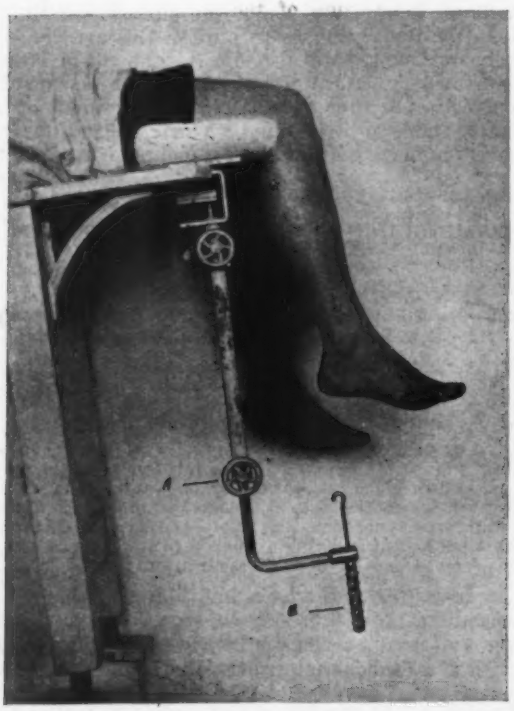

FIGURE I.
A = coarse adjustment, B = fine adjustment.

pin through the *os calcis*, applies strong traction, manipulates the fragments into position and applies the plaster direct onto the skin (Figures II and III); when this is set (after four to five minutes) he gently releases the traction, removes the pin (Figure IV), completes the plaster over the pin

FIGURE II.
Traction applied to pin through *os calcis* followed by plaster. Antero-posterior view.

FIGURE III.
Traction applied to pin through *os calcis* followed by plaster. Lateral view.

wounds, incorporating a rubber heel in the last few turns. The plaster is continued just above the knee, which is at an agle of 20° (Figure V).

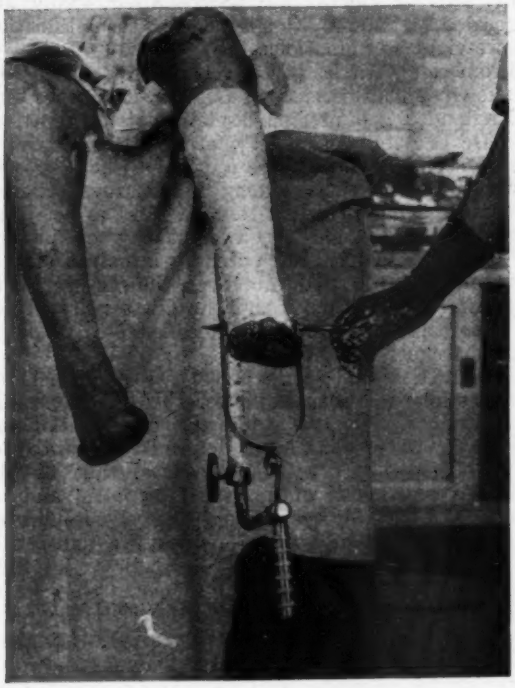

FIGURE IV.
Withdrawing the pin.

Restoration of Functional Use of the Limb.

As Watson Jones says, weight-bearing is a very necessary factor in prevention of disuse changes and in the acceleration of consolidation; so that the patient is allowed to walk and bear weight on

FIGURE V.
Plaster continued to above the knee.

the injured limb at the end of the third week, provided, of course, that the alignment has been completely corrected. In the case of oblique fractures, it is wiser to wait until the sixth week before weight-bearing is allowed. The same would apply where swelling of the limb has occurred before the application of the first plaster.

Subsequent Treatment.

As a rule, at the end of eight weeks this plaster may be removed from around the knee joint and movements of the knee may be encouraged. In another two weeks consolidation should be complete and the plaster may be entirely removed. It may be replaced with "Elastoplast" bandage, which will tend to prevent the dependent unsupported limb from becoming œdematous. With this on, active movements of the ankle joint should be practised (inversion, plantar flexion *et cetera*), so that adhesions around the joints will be stretched and pain no longer felt on use of the limb. If at the end of six weeks (from abandoning the plaster) pain is still present, manipulation under anæsthesia of the ankle and mid-tarsal joints may be necessary to prevent the patient's drifting on, to be treated for arthritis and other imaginary complaints.

Compound Fractures.

If the patient with a compound fracture is seen within several hours of injury, then the method of primary excision of the wound (introduced so successfully during the War) is applied. The fracture is then reduced by the traction apparatus in the ordinary way. But if the fracture is several days old and infection already established, then the Winnett-Orr method of vaseline gauze (with thorough saucerization of the wound) is used after the traction apparatus is applied. A padded plaster cast is applied, to be replaced in a month or so by another one, and so on. When the wound is healed, then an unpadded cast is used and weight-bearing is allowed. With use of the limb recalcification will replace the decalcification resulting from the hyperæmia of the infection.

I have closely followed the instructions given by Watson Jones in his article[1] and in a personal communication, with the happiest results; several cases are figured in the accompanying radiographs.

I must mention one unforeseen complication. In a recent case, some weeks after the application of the plaster, in a period that was absolutely devoid of discomfort or pyrexia, the temperature rose one day and local discomfort ensued; after several days the plaster was removed and pus was found to have extended from the site of an abrasion through the tibial fracture into the ankle joint; a stiff ankle ensued.

The fault was mine. I should have delayed several days to treat the abrasion before applying the plaster.

For some reason, of which I am not sure, I failed recently in a case of spiral fracture of the tibia (about two inches above the ankle joint) and fibula (near its upper end). The fracture was about ten days old and showed upward, backward and lateral displacement; but the case shown in Figures X and XI was equally old and gave no trouble. Watson Jones has treated similar fractures with the aid of his splint, apparently without any trouble.

In my own case I am left with the option: (i) of continuous skeletal extension by Schmerz's hooks into the malleoli or *os calcis*, (ii) of open operation and fixation.

The insertion of a pin through the cancellous tissue of the *os calcis* for a few minutes is a very different proposition from the practice adopted by a few surgeons some few years ago, of leaving it in for some weeks for the purpose of continuous extension. This involves a risk of sepsis (with the possibility of septicæmia), which is quite absent from the plan I have just described.

One other point: Treatment by an ambulatory plaster does not offend the age-long principle of immobilizing the site of the fracture; it simply ceases to immobilize structures at a distance from the fracture. But it must be again emphasized that alignment must be good before early weight-bearing is allowed.

Acknowledgements.

I saw the case illustrated in Figures X and XI in consultation with Dr. Lyle Buchanan. Miss Jones, of the Photographic Department, Sydney Hospital, is responsible for the photographs.

Reference.

(1) Watson Jones: *Journal of Bone and Joint Surgery*, July, 1932, page 591.

FŒTAL DEATH.[1]

By C. A. C. LEGGETT,
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THE great value and importance of an investigation of the causes of fœtal death are obvious. The loss of this early life is still very heavy, and it is very significant that the neo-natal death rate remains almost constant, while the infantile mortality rate in general has been considerably lowered by adequate preventive measures. We may reasonably hope that a reduction in the number of fœtal deaths will be associated with a lowered neo-natal mortality. Further, it will be clear that the more often measures are taken to prevent abnormal states developing, the less often will the interests of the mother be opposed to the interests of the fœtus and the less often will it be necessary to sacrifice the fœtus in maternal interests. Many of the chief causes of fœtal death are therefore discussed, and the subject is analysed with the object of determining the most likely directions in which we may successfully attack the problem.

Throughout this paper the term fœtal death is used to denote the death of the developing individual at any stage of its existence up to the time of the establishment of independent pulmonary respiration, and the use of the terms ante-natal fœtal death, intra-natal fœtal death and post-natal fœtal death is suggested.

[1] This paper is a summary of the Myrtle Sperrey Wardlaw Prize Essay for 1935.

The Incidence of Fœtal Mortality.

It is really impossible at present to estimate accurately the frequency of fœtal death, because many early accidents are unrecognized, many are concealed, and no provision is made for the notification of pre-viable terminations.

From the statistics presented by Professor Malins to the Obstetrical Society of London, it appears that in England 16% of pregnancies terminate by abortion, and De Lee stated that 24% of his patients gave a history of abortion. There appears to be a greater number of abortions among multiparous women, and more occur in urban than in rural areas. The higher incidence among city dwellers may be explained by the greater risk of parental intoxication, for example by lead; and, moreover, the easy access to the criminal abortionist and the greater prevalence of venereal disease must be considered to favour a higher frequency in the city.

Holland analysed a series of 300 cases and concluded that syphilis was responsible for 16%, the toxæmias of pregnancy for 10%, and the complications of labour for 51%, while fœtal deformity accounted for 5% of deaths. It seems, therefore, that by the efficient treatment of maternal syphilis and of toxæmias and by obviating many complicated labours we shall be able to reduce the number of fœtal deaths.

Death of the Fœtus Before the Viable Age.

Death of the early fœtus nearly always brings on an abortion, and every fatal anomaly of the fœtal body or its appendages is therefore an ætiological factor in abortion, and Mall states that 33% of aborted fœtuses are teratological.

Unsatisfactory embedding of the ovum may be due to faulty preparation of the endometrium by the combined action of the pituitary and ovarian hormones, or it may be due to faults in the action of the trophoblast or to pathological states of the endometrium itself. Death of the fœtus always occurs when a hydatidiform mole develops.

In the early months of pregnancy, when the fœtus is small and a relative hydramnios exists, it is easier for the fœtus, which is more mobile in the uterus than later in pregnancy, to slip through a loop of the cord, and especially if the cord is rather longer than usual. The resulting true knot may or may not arrest the circulation and cause the death of the fœtus. Extreme torsion may also occur and compress the umbilical vessels quite early in pregnancy, for the normal torsion is evident as early as the third month.

Acute hydramnios usually leads to abortion. It begins as a rule during the fourth or fifth month, and rapidly expands the uterus. The usual termination is abortion about the sixth month or the symptoms become so threatening that interference is necessary. Chronic hydramnios does not lead so often to abortion, though premature labor is frequent and fœtal deformity, making extrauterine life impossible, is often present. Decrease in the amount of *liquor amnii* is rare; but if it occurs early in pregnancy, adhesions and possibly fatal deformity result.

Acute infectious disease of the mother often results in abortion. Toxins may diffuse into the

fœtal blood stream and cause the death of the fœtus. Some of these diseases may also cause an endometritis which shows a strong tendency to become hæmorrhagic and cause fœtal death and abortion. A sudden rise of temperature or an increase in the carbon dioxide content of the blood and an oxygen lack, as in pneumonia, may precipitate an abortion. Normally the temperature of the fœtus is one-half of a degree Fahrenheit higher than the recorded temperature of the mother. The fœtus has an imperfectly developed heat-regulating mechanism, and is also denied the privilege of the evaporation of water from its surface, so that it can withstand only slow and moderate changes in temperature. Thus when a mother suddenly becomes hyperpyretic, the result to the fœtus is almost always hyperthermia and death. During the epidemic of influenza in America in 1919 abortion occurred in 25% to 40% of cases and premature labour in 50% to 55% of pregnant women attacked by the disease.

A fœtal mortality of 70% occurs in chronic nephritic women, and *diabetes mellitus* was, prior to the introduction of efficient insulin therapy, a chronic disease with a high fœtal mortality. Subacute and chronic plumbism are well known toxic states often causing an untimely termination of pregnancy.

Endometritis acts as a cause of abortion: by predisposing to hæmorrhages in the decidua, which kill the fœtus or which stimulate uterine contractions; by raising barriers against the growth of the placenta; by not allowing the ovum to become well implanted and perhaps predisposing towards *placenta prævia*. Chronic metritis is the usual accompaniment of chronic endometritis, and as a result the uterine muscle cannot hypertrophy or expand as freely as usual.

Single or double-horned uteri, fibroids, polypi, cervical lacerations and cervicitis and amputated cervix are all sometimes causative of abortion. Retroflexion and retroversion are very common causes of abortion. Uterine action is probably started by disturbance in the pelvic and uterine circulation and by chronic endometritis, the result of congestion. Although pregnancy is not common in prolapsed uteri, if it does occur, abortion will almost certainly follow unless the organ is replaced. It is possible that the mechanical and vascular disturbances of coitus may loosen a lightly embedded ovum.

Some women suffer habitual abortions from unknown causes. The condition may result from endocrinal dysfunction or a deficiency of vitamin *E*. Experiments carried out on rats have proved that a maternal deficiency in vitamin *E* results in the cessation of the development and the death of the developing offspring *in utero*.

Criminal abortions are nearly always the result of direct trauma to the ovum or of toxic states brought about by the exhibition of abortifacient drugs.

For the prophylaxis of habitual abortion a careful physical examination of both parents should be made, and also both parents should be submitted to the Wassermann test. Any uterine displacements should be corrected, and specific disease, if present, should be adequately treated. An attempt should be made to eradicate all sites of focal sepsis in the mother. Detailed advice of the hygiene of pregnancy should be given, and a warning should be issued against severe exercise and coitus. It is advisable to confine the mother to bed at those times when the menstrual periods would have taken place and at times when previous abortions had occurred. Provision for a suitable diet should be made and strong purgatives avoided. Articles of diet shown to contain vitamin *E* should be included. The proper administration of *corpus luteum* is recommended strongly by some experienced people. The use of potassium chlorate and of potassium bromide and extract of *Viburnum Prunifolium*, though for the most part empirical, is very valuable.

Ante-Partum Death of the Viable Fœtus.

Three of the most potent causes of fœtal death act mainly in the later months of pregnancy. They are syphilis, the toxæmias of pregnancy and morbid placental states.

The toxæmic states of pregnancy which are associated with a definite fœtal mortality are pre-eclampsia (the toxæmic albuminuria of pregnancy), eclampsia, toxæmic vomiting and acute yellow atrophy of the liver.

A heavy fœtal death rate attends untreated cases of preeclampsia, and death is much more likely to occur with the acute than with the subacute manifestation of the condition. In the acute type the fœtal mortality may reach 50%. The dead fœtus is usually retained for a few days *in utero* and is then born in a macerated state; the premature delivery of the fœtus is the natural method of relieving the maternal distress and of effecting a cure. The actual causes of death are: (i) the direct action of the toxins on the fœtal organs, (ii) extensive placental infarction and retroplacental hæmorrhage.

In eclampsia 40% to 50% of viable fœtuses perish, although the figures from the Royal Hospital for Women, Paddington, show 36% mortality. The actual cause of fœtal death may be: (i) relative placental insufficiency from retroplacental hæmorrhage or excessive infarction, (ii) asphyxiation during repeated fits of the mother with prolonged cyanosis, (iii) drugs, for example chloral hydrate or morphine, administered to the mother, (iv) birth injuries to which prematurity or hastened delivery predisposes.

Fœtal syphilis may be the actual cause of death, or a fœtus congenitally weakened by syphilis may fail to survive the birth process or the syphilitic placenta may be an inadequate respiratory organ. Syphilis has proved not to be such an important cause of fœtal death as was formerly imagined, but still its effects are severe and the treatment is easy and efficient. Most fœtal deaths due to syphilis occur after the twenty-eighth week, but if efficient anti-syphilitic treatment is commenced before the sixth month, over 90% of healthy children are obtained. The method to apply in investigating the rôle played by syphilis in the causation of fœtal death is briefly as follows: (i) the fœtal organs are examined for the *Spirochæta pallida*. (ii) The Wassermann test is applied to both parents. (iii) Fœtal organs and the

placenta are weighed and measured. (iv) An examination of the ends of the long bones for osteochondritis is made. (v) A histological examination of the organs of the fresh fœtus and of the placenta is made. If these methods are employed, very few, if any, cases of fœtal death due to syphilis will be missed. In approximately 30% of all macerated fœtuses of viable age the spirochæte can be demonstrated in the fœtal tissues. If the disease is in the active stage, the fœtus generally perishes, but if the disease is latent, a living congenitally syphilitic child is the usual result of the pregnancy.

There is nothing absolutely diagnostic in the macroscopic appearance of the syphilitic placenta, either in its form or its texture. The fact that the syphilitic placenta is sometimes heavier than a normal placenta is not of the least value as evidence of syphilis. The *Spirochæta pallida* may be demonstrated in the placenta with great difficulty, but on histological examination of the villi certain typical changes are found. The villi are uniformly increased in size so that they become crowded together and the intervillous spaces are correspondingly reduced in size. This increase in size of the villi is due to an increase in the amount and density of the connective tissue stroma. The collagen fibres are more numerous, and the cells more abundant and closely packed than in a healthy villus. The second great difference is the greatly diminished vascularity of the villi in the syphilitic placenta. The blood vessels are usually absent from the terminal villi, and when present are greatly reduced in number and size. These changes sometimes affect the whole placenta uniformly, and sometimes only certain portions of the placenta are affected. It is quite obvious that chronic pathological reactions such as the above will diminish the efficiency of the placenta by cutting down the amount of blood circulating through the intervillous spaces on the one hand and the capillary blood vessels of the villi on the other. Moreover, the increased amount of stroma will impede the free diffusion of materials between the fœtal and maternal circulations. An advanced condition could result in the death of the fœtus without any actual infection of the fœtus itself.

Placenta prævia may be the cause of *ante partum*, *intra partum* or *post partum* fœtal death. Where *placenta prævia* is the primary factor, the consequent factors leading to fœtal death are: (i) fœtal anaerosis resulting from early and extensive separation of the placenta, (ii) fœtal anaerosis secondary to severe maternal anæmia, (iii) the complications of labour associated with *placenta prævia* such as *prolapsus funis* and malpresentation, (iv) fœtal anæmia from rupture of *vasa prævia*, (v) well or ill-directed obstetrical procedures. The fate of the fœtus in *placenta prævia* is largely dependent on the knowledge, skill and opportunities of the obstetrician. The obstetrician may endanger the life of the fœtus by causing unduly wide separation of the placenta or by tearing through large umbilical vessels or by delivering too rapidly, causing excessive cranial stress or by permitting the prolapse of the cord.

The placenta is an organ which possesses a very short term of functional existence. It reaches maturity and passes on to senility in a few months. Degenerative changes set in, and, were it not for a generous margin of safety, the life of the fœtus would indeed be precarious. When considering placental insufficiency, it is important to realize that the amount of placental tissue may be enough for the requirements of the fœtus before labour begins, but not sufficient to supply the greater demands of the fœtus during labour, especially a protracted labour. The normal senile changes which occur in a placenta may come on earlier than usual, and the endarteritis, thrombosis and infarction may cause relative placental insufficiency before full term is reached. Occasionally, too, the intrauterine existence of the fœtus is prolonged and normal degenerative changes are allowed to continue to dangerous degrees. This is another reason why post-maturity is a definite menace to the fœtus, and De Lee recommends that labour should be induced ten days after the calculated date of confinement. Very interesting are the examples of intrauterine death of the fœtus at a more or less fixed period of pregnancy, generally a few weeks before term. The fœtus is often quite well developed, and the presenile placenta probably accounts for the failure to reach term successfully in the event of any other disease. If this intrauterine death can be anticipated and induction of labour is performed, a living child can often be obtained.

Intra-Partum Death of the Viable Fœtus.

For the child any degree of prolapse of the cord is very dangerous, since the soft blood vessels are easily compressed against the hard pelvic walls. Compression of the cord affects the vein first, reducing the amount of blood going to the fœtal heart and causing placental congestion. There results a lack of stimulation of the sino-auricular node, and this may account for the very slow fœtal heart rate of fifty to sixty during uterine contractions. When the cord compression is relieved, the fœtal heart rate immediately rises to one hundred and thirty to one hundred and sixty per minute, but asphyxial lesions which have resulted may be sufficient to cause death, so that there is a 40% to 50% mortality in operated cases and 80% mortality in untreated cases.

An abnormally long cord predisposes to prolapse of the cord and to the formation of knots and to the coiling of the cord around the neck. Coiling of the cord around the neck is found in approximately 20% of deliveries and may interfere with the mechanism of labour, causing deflexion attitudes, delayed rotation and even shoulder presentation. Compression of the cord may occur between the pubic bone and the neck and fœtal asphyxia result. It is sometimes possible to diagnose coiling of the cord around the neck by exerting pressure with the finger tips deep between the occiput and the shoulder and at the same time counting the fœtal heart rate. A slowing of the fœtal heart rate during compression is taken to indicate the presence of the condition. An abnormally short cord on the other hand may endanger the life of the fœtus by delaying the second stage or by leading to rupture of the cord or the tearing of the cord from the placenta or by causing premature separation of the placenta.

Contracted pelvis is one of the primary causes which should only very rarely lead to fœtal death. Detection of marked degrees of pelvic contraction is generally made, so that in these cases the fœtus usually has the best opportunity. In the vast majority of cases in which the fœtus perishes, the degree of pelvic contraction is slight or there has been no ante-natal supervision at all. It is as well to remember that women with slight degrees of pelvic contraction can often pass through several early pregnancies quite successfully owing to the small size of the fœtus; but if a somewhat larger fœtus develops in a later pregnancy, disproportion may result, for it is the relative size of fœtal head and maternal pelvis which is the important thing. The delivery of an oversized or post-mature fœtus through a normal pelvis is more dangerous to the fœtus than the delivery of a normal child through a contracted pelvis, even though the relative sizes are the same. In cases of disproportion the fœtus runs the risk of a prolonged labour, of destructive operations, of prolapse of the cord and of asphyxia; further, compression of the head irritates the vagal centre and causes cardiac slowing, which still further reduces the oxygen supply to the vital tissues.

In the case of fœtuses which are weakened by disease or prematurity, a rigid cervix, vagina or pelvic floor might be sufficient to produce excessive cranial stress and the death of the fœtus. Seitz stated that one-third of the fœtal deaths in head presentation are due to delay in labour when the presenting part is on the perineum. De Lee emphasizes this and recommends that the fœtal heart be auscultated frequently during the second stage and that delivery be hastened if signs of fœtal distress are evident.

Precipitate labour can be of as much danger to the fœtus as a prolonged labour. Rapid passage of the fœtal head through the birth canal is apt to cause excessive cranial stress and intracranial damage, and delivery at unexpected times may result in the accidental death of the fœtus.

Evidence of excessive cranial stress is a very frequent finding in cases of fœtal death during or after a breech delivery, and the autopsy usually reveals tearing of the *tentorium cerebelli* or intracranial hæmorrhage. Breech labour is attended by a fœtal mortality which varies with the skill of the *accoucheur*, but which often reaches 10%. This high figure has been investigated and much light has been thrown on its causation. The injury generally results from too rapid delivery of the after-coming head. The head is subjected to sudden stress as it is forcibly dragged through passages only partially prepared for the passage of the least compressible part of the passenger. In a vertex delivery the passage of the head is only permitted after the maternal parts have been subjected to a slow preparatory dilatation lasting several hours.

The death rate of breech fœtuses will fall only when it is realized that they are killed, not by cord compression, but by excessive cranial stress, and when this knowledge has brought about a corresponding change in our present obstetrical procedures.

Malpresentation and premature rupture of the membranes are well known causes of fœtal death, but it is possible that certain drugs administered to the mother may cause the death of the fœtus. Fœtal deaths have been recorded after the use of quinine and castor oil for the induction of labour, and several obstetricians have concluded that, as with some women, so with their offspring, there exists an idiosyncrasy to quinine, and it is as well to ascertain the presence or absence of a maternal idiosyncrasy before administering quinine.

Injury to the fœtal head during the birth process, with resultant damage to the meninges, intracranial hæmorrhage or fracture of the skull bones, is one of the most important causes of *intra partum* and *post partum* fœtal death. On analysis it is found that the accident occurs in spontaneous delivery, as well as in forceps and breech births, and in rapid and precipitate deliveries, as well as in prolonged and difficult labours. Eardley Holland reported the results of 167 autopsies on stillborn fœtuses, and 48% of these had suffered lacerations of the *tentorium cerebelli*, generally with accompanying intracranial hæmorrhage. In most of these cases delivery had certainly been by the breech or by forceps, but a few fœtuses had been born by apparently normal labours.

The types of injury which may occur are fracture of the skull bones, tears of the dural septa, rupture of intracranial venous channels, separation or sudden and excessive overlapping of adjoining cranial bones, and the squamous part of the occipital bone may be separated from the occipital condyles and then forced directly on to the *medulla oblongata*, causing immediate death.

Unlike the firm skull bones of the normal full term fœtus, those of the premature fœtus offer but little protection to the delicate underlying structures which are themselves notoriously fragile at this stage. Tentorial splits are more common in premature fœtuses because of the greater immaturity and consequent weakness of the strengthening bands of fibres in the dural septa. Browne states that the liability to cerebral hæmorrhage in premature infants is about sixteen times that in infants born at term. The elasticity of fibrous tissue appears to be less at this time, probably because the white inelastic fibres develop and reach maturity earlier than the yellow elastic fibres.

Babies from toxæmic mothers are especially prone to tentorial injuries, even in the easiest deliveries. Then again the tissues of a syphilitic infant appear very fragile, and undoubtedly some infants have naturally a constitutional weakness of structure.

Undue haste in the delivery of the head, and more especially the following head, implies a risk to the fœtus which is often greater than the risk which that hasty intervention intends to avoid. Injuries are much more liable to occur when compression of the head and consequent moulding occur rapidly. Nothing should be done to hasten or shorten a labour which seemingly is progressing normally, and particularly not in a premature labour, for the smaller size of the premature fœtus does not counterbalance the increased risk it runs of serious intracranial damage.

Venous congestion of the fœtal brain and meninges occurs during a normal labour, and when it is developed to an excessive degree, it may be very dangerous. The resulting œdema of the brain substance, especially of the vital centres of the *medulla oblongata*, may in itself cause the death of the fœtus. The degree of congestion may be so intense as to cause the rupture of abnormally fragile or even of normal vessels. The cerebral veins near their terminations in the superior longitudinal sinus are especially liable to be affected.

All prolonged, difficult or precipitate labours, all hasty breech and badly performed instrumental deliveries, are potential causes of intracranial injury. To these exciting causes must be added the predisposing causes of prematurity, syphilis and maternal toxæmia.

It is probable that the majority of fœtuses die an asphyxial death, and, if efforts are made to diagnose impending asphyxia during delivery, many such deaths may be avoided. Fœtal distress *in utero* is evidenced by qualitative and quantitative alterations in the fœtal heart beats. There is often noted a change in the frequency, regularity, strength and rhythm of the heart sounds. A persistent slowing of the heart rate to 100 beats per minute is always significant of danger, and if during uterine contractions the rate goes down to 80 or less, there is no doubt about the dangerous condition of the fœtus, and delivery forthwith is indicated. Often there is a period of intense tachycardia accompanied by the expulsion of thick meconium, to be later followed by the bradycardia and the escape of thinner meconium. An increase in the rate of the fœtal heart is not such a reliable sign, but rates above 175 with no maternal fever are to be viewed with apprehension. A sudden change from a slow heart rate to an excessively rapid rate denotes paralysis of the vagus centre, and is of very bad omen. Irregularity of the heart action may be observed. A few strong beats are followed by a run of light short taps, and sometimes the heart may run and stumble along in a most erratic manner, and this is most ominous if it follows a period of slowed action. *Liquor amnii* stained with fresh meconium is a valuable sign of impending intrauterine asphyxia. The appearance of meconium is the result of the active peristaltic movements characteristic of asphyxia. Fresh meconium is dark green and lumpy, and differs from old meconium, which is more intimately mixed with the *liquor amnii*. The appearance of meconium is not of absolute significance, but is of value, and may long precede the slowing of the heart. The fœtus may make violent respiratory movements which can often be felt during forceps delivery. Very active and violent fœtal movements may be felt by the mother or the attendant. Other signs of fœtal distress are loss of tone in the sphincter in breech labours, the weakening and disappearance of pulse in a prolapsed hand or cord, and the absence of pulsation in the anterior fontanelle.

In both degrees of asphyxia (*pallida* and *livida*) the general principles of treatment are similar. A clear airway must be established. It is as well to avoid violent and disturbing methods of resuscitation and to aim at securing warmth, rest and quiet. It is necessary to secure and maintain a cardiac action sufficient to supply the vital medullary centres with blood and to introduce into the pulmonary alveoli sufficient oxygen for the requirements of the vital organs. Great care and gentleness must be exercised in all methods used to resuscitate the asphyxiated fœtus, and care should be taken not to obstruct the first spontaneous attempts to breathe. As long as the faintest heart beats are heard with the stethoscope, there is a chance of the survival of the fœtus.

Conclusion.

Although a great deal has been accomplished already in ante-natal work, in improving the standard of midwifery practice, and in parental education, we have not yet reached the limit of our resources in the matter of the prevention of fœtal death. If we are to be sure of the results we are obtaining and expect to obtain, it is necessary that careful *post mortem* examinations of all dead fœtuses should be made; and neglect of these studies in the past has allowed much fœtal and neo-natal pathology to remain obscure.

Let us summarize some of the means at our disposal for the prevention of fœtal death. Early in pregnancy advice on the general hygiene of pregnancy can be given, uterine displacements corrected, and maternal syphilis efficiently treated. Regular and frequent examination of urine allows of the detection, and then the treatment of toxæmic conditions. If a gentle and successful external version is performed when the breech is presenting the 10% mortality which attends breech deliveries can be considerably reduced. The risk of the development of a persistent occipito-posterior position can often be avoided by the application of Buist's pad and binder. If the fœtal heart sounds are auscultated at regular intervals during labour and other evidences of intrauterine fœtal distress are looked for, the approximate condition of the fœtus can be determined and, if necessary, appropriate means can be employed for its relief. The dangers of post-maturity can be avoided by the induction of labour. Disproportion can be detected during pregnancy and carefully considered intra-natal treatment adopted. In the treatment of fœtal anaerosis we now have physiological methods of supplying oxygen to the blood and of stimulating the respiratory centre by carbon dioxide. We have no control over the development of fœtal anomalies nor over many morbid placental states.

When ante-natal and intra-natal methods are closely correlated in preventive work the most promising groups for attack are: (i) the complications of labour, (ii) syphilis, (iii) the toxæmias of pregnancy in the order of the number of successes likely to be recorded, and although the total abolition of fœtal death is quite beyond the scope of the most exaggerated dream, a large proportion of it is the result of essentially avoidable causes.

PSYCHOANALYSIS AND GENERAL PRACTICE.

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The Need for Psychoanalysis.

IT has been estimated that more than half of the illnesses for which patients seek treatment are psychological in origin. If this be so, it is not only important to understand how psychogenic illnesses are caused, but to employ the best instrument available for their treatment—psychoanalysis.

The Importance of Unconscious Mental Processes.

Though poets in every age have dimly recognized the existence of hidden depths to the human mind, Freud was the first to demonstrate scientifically that what we call thinking is not synonymous with consciousness, but that it includes processes which are entirely unconscious.

Analogy between the Mind and a Volcano.

A rough idea of the relationship between consciousness and unconscious mental processes may be gained if the mind be compared to a volcano. The surface appearances may be likened to consciousness, whereas the hidden forces below the surface correspond to the unconscious impulses.

The name which Freud gave to the study of unconscious urges is psychoanalysis, and nowadays investigation into this part of the mind, which psychologists once asserted to be non-existent, has become the most important department of psychology.

The academic psychologists confined their attention to the quiescent crater of the volcano and ignored the mighty forces below the surface. Freud, on the other hand, studied the mental eruptions known as psychoneuroses, and was able in consequence to demonstrate the nature of the energies responsible for the surface changes. Freud's success in this respect may be compared with that of the clinicians whose observations led to the discovery of the function of the ductless glands, and the failure of the academic psychologists may be likened to that of the physiologists whose investigations into the purpose of the endocrines was halted by the unobtrusiveness of the material which they studied.

It was the striking departures from normal such as occur in hyperthyreoidism and in hypothyreoidism which gave to clinicians the clue to understanding the function of the thyreoid gland; and it was the obvious nature of the symptoms studied by Freud which made it possible for him to make such tremendous advances in the study of mind.

If, then, these mental eruptions are so striking, why was not their cause discovered long ago?

There are at least three answers to that question. In the first place Freud invented the method of free-association which enabled him to observe the mental behaviour of psychoneurotic patients as their thoughts were being uttered, he having adopted the simple plan of instructing them to say whatever came to their mind—a method which had never been even considered before. In the second place, the discovery of the causes of psychoneurosis had to wait until someone was sufficiently interested to study psychoneurotic patients. Thirdly, psychoanalysis presented, in addition, a different problem to that of any other science, the nature of the findings being such that a would-be observer had to overcome an insistent and ever-present desire not to see what lay in front of his eyes. Freud discovered afresh the truth of the saying: "There is no one so blind as he who does not wish to see", and was able to apply it to himself as well as to his patients. It is only a limited number of people who can take a detached attitude to their own mental processes, and, in addition to genius, Freud possessed this capacity to a greater extent than most men.

Probably a man like Pasteur would have been capable of accomplishing what Freud succeeded in doing if he had elected to study psychoneuroses instead of bacteria. The vast majority of mankind, however, would be incapable of such an objective attitude of mind.

That this statement is true is borne out by the history of the science of psychoanalysis. Lesser men than Freud, under the influence of his genius, did succeed for a time in observing in insane and psychoneurotic individuals evidence indicating the existence of unconscious impulses; but, when they realized that Freud considered their patients' symptoms to be merely exaggerations of similar desires present in the depths of their own and every other man's mind, mental blindness descended on them once again.

Jung is an example of such a flight from knowledge, and so is Adler. These two men did not, however, jettison everything which they had learnt from Freud. They retained fragments of psychoanalytical knowledge, but became blind to the most important discoveries which he had made; and, while doing so, attempted to nullify Freud's teaching by over-emphasizing the significance of such parts of his work as they continued to accept. In doing so they behaved as would an investigator of volcanic disturbances if he were to insist that eruptions are not primarily due to the hidden forces, but merely to the presence of water in the vicinity of the crater. It is known that, when water percolates into the interior from the surface, eruptions may be induced earlier than they would otherwise occur, because of the explosive effect of the resultant steam; but he would be an unscientific investigator who ignored the heat which is responsible, not only for the steam-formation, but for the eruption itself.

Facts on which Psychoanalytical Treatment is Based.

The basic discovery which Freud made is the existence of the Œdipus complex and of the castration complex which is so closely associated with it.

Freud was courageous enough to admit that the Œdipus complex, in addition to being a repetition in himself of incestuous wishes once openly expressed by his pre-civilized ancestors, originated anew in his own childhood. He also demonstrated the fact that this complex passes out of consciousness at approximately six years of age, and that it leads to the protean symptoms from which psychoneurotic individuals suffer.

When the Œdipus complex passes into unconsciousness, other memories associated with it are forgotten also. That is the reason so few incidents of childhood survive in consciousness.

Lactation.

Such forgotten memories include the reactions associated with breast feeding, which, in a male child, become directly associated with the Œdipus complex, precisely because they are directed towards his mother.

These impulses are the more readily forgotten because they, and those which are usually spoken of as sexual, are both of the same nature. Freud therefore calls them all sexual, and distinguishes those commonly described as sexual by applying to them the term genital.

It will be obvious, then, that Freud uses the word sexual in a more inclusive sense than is usual; and does this because he has obtained evidence by means of free association that the behaviour of a baby during lactation and the rapture of an artist at the sight of a beautiful landscape are both of the same nature as the impulse which subserves reproduction.

The earlier in life the forgotten reactions associated with the Œdipus complex occur, the more profound their effects. It follows that those due to lactation are included among the impulses which have been most carefully studied by psychoanalysts; as a result of this they have been distinguished by a special term, and entitled oral.

Though abnormal oral impulses are believed to be, in part, due to engrams inherited by the nursling from remote cannibalistic ancestors, they are, in the main, the result of unsatisfactory conduct by the mother of the process of lactation.

Abnormal behaviour by a nursing mother usually takes the form of frustration of the nursling's hunger—a deprivation which is, of course, not consciously determined, but due to such causes as prudery. When a mother is ashamed to feed her baby in the presence of strangers—a common psychoneurotic symptom—she may interrupt feeding even in the presence of another woman, or, alternatively, the quantity or quality of the milk may be reduced without her being aware of the cause, and sometimes of the fact itself.

Underlying prudery, and present when this symptom is absent, there exist unconscious urges which are the result of the mother's Œdipus complex: if the baby is a male, he represents her father, against whom she still cherishes unconscious impulses of revenge because he did not gratify her Œdipal desires in her own childhood; as a result of this disappointment she withholds milk from her son. Such a reaction on the mother's part is one aspect of the tendency to inversion of the Œdipus complex (the psychosexual state known as homosexuality); whereas withholding milk from a daughter is due to the mother's desire to attack her own mother, and is, therefore, a direct expression of the Œdipus complex.

The unconscious aggressiveness of a mother towards her children exists, of course, concurrently with conscious love, a fact which may be appreciated more readily when one remembers how comparatively common is the remark made by a mother about her baby: "I could eat him, he is so lovely." The second statement is, in part, due to compensation for the aggressive oral impulses which find humorous expression in the first. In other words the frequency with which such a remark is made (and it is thought more often than uttered) is corroborative evidence of the observations of psychoanalysts that mothers have a double attitude to their children, which is expressed with varying degrees of emphasis on aggressiveness and affection. Such an emotional attitude is known technically as ambivalence.

Partial starvation of the nursling may be the result of physiological abnormalities such as retracted nipples or cleft palate. The physical causes of oral deprivation are, however, rare in comparison with the psychological, and, in any case, may exist in conjunction with these.

The result of oral deprivation is, as one would expect, to produce a state of aggressiveness in the nursling, a condition of affairs which is rendered more potent in its effects the more often hunger is experienced.

The oral aggressiveness due to partial starvation reinforces the cannibalistic urges which preexist in every child, but which are more than usually pronounced in some infants as a result of strong oral impulses in their immediate ancestry—a state of affairs that might well be described as constitutional.

Oral aggressiveness, whether due to environment or heredity, is called oral sadism in psychoanalytical parlance, but analysts have found that the environmental factor always exists even when the constitutional factor is pronounced.

Oral sadistic impulses are most insistent after teething begins, and are then expressed by the desire to bite, which, however, is not put into action for fear of retaliation, and, in consequence, is transformed into anxiety concerning being bitten.

It is probable that, when oral deprivation occurs before teething, the nursling is less inclined to tolerate even a minor degree of frustration subsequently. This explanation would account for the fact that oral sadistic phantasies are ventilated during the analysis of patients who have been artificially fed before the teething period—for the necessity for bottle feeding is the result of a previously inadequate supply. In addition, an artificially fed infant would react to the bottle if the supply were unsatisfactory in quantity or quality in the same way as a nursling does to its mother's breast under similar conditions of deprivation. Such oral sadism becomes associated with the woman who habitually holds the bottle and, if this does not happen to be the baby's mother, will be directed against the substitute—a variety of conditioned reflex.

Similar responses occur if the baby is fed by a foster-mother; and, whether the infant has lost his mother or not, the mother-substitute becomes the object of Œdipal desires, which are oral sadistic if the child is inadequately fed.

Not only will an inadequate supply lead to oral sadism in the nursling, but delay in appeasing hunger will also do so, this being a common result

of maternal oral sadism even when the milk is satisfactory in quantity and quality.

The orally frustrated individual, having been made impatient as a result of waiting to be fed in early infancy, is forever afterwards (unless analysed) easily annoyed when delayed in any way, especially if wishing to satisfy an instinctive urge. Impatience is, therefore, classified by analysts as an oral character trait.

At first thought it might seem surprising that oral sadism should be evoked by an habitually excessive supply, or by feeding at intervals that are too short. Yet this is a fact. This may be the result of hunger induced by occasionally receiving a smaller feed than usual or by sometimes having to wait longer than is customary. Whether this explanation is correct or not, it is probable that the oral sadistic phantasies, which psychoanalysts have noted in those patients who received an excessive amount of milk in babyhood, might be the after-result of discomfort or pain felt at that time.

Habitual over-feeding and too frequent feeding are, as one would expect, due to the mother's ambivalence. Incomplete compensation for the unconscious wish to withhold milk leads to irregular feeding and occasional hunger.

Infantile oral sadism is readily converted into its opposite—masochism—a state which is conducive to anxiety, because the baby expects retaliatory punishment for its aggressiveness. Anxiety, then, is the usual indicator of the existence of oral sadism in a nursling, but, because it inhibits digestion, anxiety may be converted into a physical symptom such as vomiting. In other words, in the absence of overt anxiety, dyspepsia may indicate the existence or oral sadism in babyhood, and, because unconscious impulses persist unaltered forever afterwards unless recognized through psychoanalysis, in adult life also.

It will be obvious from what has been said about lactation that mothercraft is not only conferring physical benefits on babies and on future adults, but psychological benefits also.

Defæcation.

The aggressiveness which a child feels as a result of his mother's ambivalent interference with defæcation, is known as anal sadism.

If considerable oral sadism already exists, as is quite common, the two forms of sadism reinforce each other. That is the reason why sadistic impulses attain maximum intensity about the third year, which is the age when the child usually experiences most difficulty with the function of defæcation.

Anal sadism is readily transformed into masochistic anxiety just as is oral sadism, but at this stage of development anxiety is, in turn, usually changed into a sense of guilt.

The Four Phases of Sexual Development.

Because difficulties connected with lactation commence at an earlier age than those associated with defæcation, sexual development is said first to pass through an oral, and then an anal phase. There is, in addition, another phase subsequent to the anal known as the phallic, which is followed by the final phase, the genital, when those impulses that correspond to adult sexuality find expression.

The genital phase is thus the flower of sexual development rather than the plant itself.

As each early phase continues to have its effect on subsequent phases, it follows that the sex instinct may be described as consisting of at least four "components". (Actually, more than four components of the sex instinct are distinguished, but the oral, anal, phallic and genital are the principal components.)

The Importance of "Fixations".

If, through pronounced abnormalities of the oral component of the mother's sex instinct, strong oral impulses are produced in the child, its own sexual development is retarded—a state of affairs which is described as "fixation in the oral phase".

As a result of oral fixation, the child would have greater difficulty in successfully passing through the anal phase also, though the chances of failure would be reduced if the anal component of the mother's sex instinct happened to be comparatively satisfactory or, alternatively, if the father's sex impulses were relatively healthy. The genital phase, however, is one during which the child's desires will certainly be frustrated, considering that the Œdipal wish is inseparably bound to this stage.

This being the case, repression (unconscious suppression) of all the sexual components tends to occur during this period of development, which, however, will be reduced in degree in proportion to the opportunity afforded the child of forming an affectionate attitude to its parents in response to their friendly understanding—a process which is termed sublimation.

If a maximal degree of sublimation is impossible because of pronounced fixation during earlier stages of development, the child tends to regress (as it is called) to one of these phases: to the oral, if fixation was excessive then; to the anal phase, if fixation was less oral than anal; and to the phallic, if the first two stages were comparatively well surmounted.

It must not be thought, however, that regression to the phallic level would mean that no anal or oral symptoms would exist; oral and anal fixation occurs in every child, and continually strives to express itself. It is more a matter of degree, and the emphasis on one particular phase is a convenient way of indicating rather than measuring the extent of the regression.

Psychogenic illness is of a mild type if regression is of minor degree, and serious if regression is pronounced. In other words, the severity of psychogenic illness depends upon the earliness of the phase during which maximal fixation occurred. In fact, it might be said, when fixation is extremely pronounced at the oral or anal stage, that the child does not succeed in passing through the phallic phase at all. In that event regression can hardly be said to occur, and descriptively all the emphasis must then be put on the fixation.

It should be carefully noted that it is infantile psychogenic illness which is meant, but as all later psychogenic illnesses constitute a revival of those of early childhood, the latter are the important illnesses to study.

The fact that psychogenic illness of later life is a revival of that of infancy has been succinctly indicated by Freud's phrase "the return of the repressed", the phrase "the repressed" indicating the anxieties associated with the sadistic fixations of infancy which have been rendered unconscious. These may remain latent throughout adult life and only reappear in old age, the psychoneurotic character of which has been so aptly expressed by its popular description—"second childhood".

Essential Difference between Psychoneurosis and Psychosis.

As the severity of psychogenic illness depends basically on the earliness of the phase during which maximal fixation occurred, the term psychoneurosis is applied to illnesses in which this was comparatively late, and the condition is described as a psychosis when it was early. This is the essential difference from the ætiological point of view between these two forms of psychogenic illness—a difference which is also borne out descriptively as is indicated by the lessened appreciation of reality in psychosis when compared with psychoneurosis, this being the effect of the necessarily chaotic mental state of a very young infant.

The critical point of development is, as one would expect, the time when sadism reaches its greatest intensity—the middle of the anal phase, about the third year of life. If fixation is of maximum degree before that time, the child is unable to surmount this obstacle satisfactorily and psychosis eventually results. When the crisis has been passed in a comparatively complete manner, even if fixations occur subsequently, the illness will only be psychoneurotic.

Perversions the Obverse of Psychoneuroses.

When the fixations occur after the critical point of development, it is not necessarily a fact that psychoneurosis will result in later life; a perversion may develop instead.

All children deal with the anxieties associated with fixations by a tendency towards the formation of perversions—a condition of affairs which Freud epitomizes by referring to children as being "polymorphous perverse". It follows that adult perversions are the continuation past childhood of one or more of these tendencies. On the other hand, those individuals who repress these perverted tendencies remain psychoneurotic. Perversions may therefore be described as the obverse of psychoneuroses.

Interaction between One Generation and the Next.

The interaction between the psychogenic illnesses of parents and those of their children is probably of the nature of a conditioned reflex. It does not follow, however, that parents will produce the same type of psychogenic illness in their children as that from which they themselves suffer. A psychoneurotic parent might have a child who becomes psychotic, or a parent who suffers from a psychosis might have a psychoneurotic child. As a general rule, however, the more parents approximate to a healthy psychological norm, the more likely are their children to do so.

As psychoanalysis is the only effective method by which the interacting influence of one generation on the next may be interrupted, and a vicious circle changed into a beneficent one, it is surely justifiable, in order to emphasize these supremely important facts, to modify an Old Testament quotation as follows: The fixations of the parents shall be visited upon the children unto the third and fourth generation except when interrupted by psychoanalysis.

Essentials of Psychoanalytical Technique.

The fixations which are so important in the causation of psychoneurotic illnesses can only be discovered by overcoming strong resistances, the most important of which is repression.

Free-Association.

The patient having been asked to say whatever comes to his mind, actions, slips of the tongue and dreams are all attentively studied in addition to every word he utters, because these reveal (and at the same time are meant to conceal) the unconscious phantasies that are the result of his fixations.

When the patient learns the cause of his fixations and reexperiences the anxiety originally associated with them, he recovers from his psychoneurotic illness. The change in mental habits that results from this emotional process consists in the substitution of socially acceptable behaviour—in other words in sublimation—for the abnormal impulses which were previously inaccessible to conscious control.

Reverting to the analogy of the volcano, sublimation would correspond to utilization of the heat-energy which would otherwise be of no value, but on the contrary is actually of potential danger to mankind.

Analogy of a Forgotten Language.

All analogy being illustrative, it is advisable, in order to make the technique of analysis more readily understood, to adopt a new one—the analogy of a forgotten language. When Freud first listened to the associations of his patients, he had to relearn a "language" universally used by his primitive ancestors and once "spoken" by himself—the language of symbolism, a method by which children have always expressed their unconscious desires, especially during play.

As a result of Freud's work, and that of his successors, psychoanalysts can again understand the primitive language of symbolism. In addition, the reason it originated has been discovered, and the process by which it evolved.

The Value of a "Training-Analysis".

It is possible for those who are just as capable as Freud of taking an objective view things to acquire the same knowledge as he did, if they study psychoneurotic patients according to the technique of free-association. To do so, however, would mean an unnecessary waste of time even for these, now that Freud has deciphered the Rosetta stone.

ILLUSTRATIONS TO THE ARTICLE BY DR. H. SKIPTON STACY.

FIGURE VI.
H.W.C. Right leg. Antero-posterior view before reduction.

FIGURE VII.
H.W.C. Right leg. Antero-posterior view after reduction.

FIGURE VIII.
H.W.C. Left leg. Antero-posterior view before reduction.

FIGURE IX.
H.W.C. Left leg. Antero-posterior view after reduction.

FIGURE X.
F.H. Before reduction.

FIGURE XI.
F.H. After reduction.

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This being the case, the International Psycho-Analytical Association requires those who wish to become psychoanalysts to undergo analysis themselves prior to commencing practice. For instance, even associate membership of the British Psycho-Analytical Society, which is a branch of the Association, is now restricted to individuals who have been analysed.

Time Required for Psychoanalytical Treatment.

The average therapeutic analysis takes three years to complete, and this despite the fact that patients have to attend for approximately an hour five or six days every week. There is, however, one variety of psychoneurosis in which the cause can be eradicated in half that time. On the other hand, when a patient merely desires relief from his symptoms, even one session of analysis may sometimes be of value.

The Positive Phase.—During the early part of a therapeutic analysis the patient generally shows marked improvement, a fact which is due to the relief of anxiety through interpretation of the meaning of his symptoms. This period is called the positive phase.

The Negative Phase.—Later a time arises when the symptoms become worse again. This is the beginning of what is known as the negative phase, a period of increased severity which is a necessary prelude to ultimate and permanent recovery and, at the same time, is an anticipation of what the patient would probably have experienced in the future if he had never commenced analysis.

In respect of the negative phase, psychoanalysis is comparable with a surgical operation, which necessitates a patient's going through a period of danger and of pain in order to have the cause of his illness removed. Just as a surgeon may consider palliative treatment the wiser course to pursue because of the risks associated with radical measures, so a psychoanalyst might decide against a full analysis involving the dangers of the negative phase and institute a short analysis with a view merely to relieving his patient's symptoms.

Palliative Analysis.—A palliative analysis might be necessary because of other reasons than the risks of a radical one, such as the inability of the patient to attend for the requisite length of time. Some patients may be considerably relieved in a very short time, as has been already stated, though at least six months is generally required for a palliative analysis to produce its full effects.

The analyst's interpretations are based on his knowledge of symbolism, and for this reason even a short analysis, let alone a radical one, is superior to any other form of psychotherapy.

Fees.

It is advisable for patients to pay for their own treatment if undergoing a radical analysis, because this assists in overcoming the unconscious wish not to recover which asserts itself so forcibly during the negative phase. A successful analysis is possible, however, when the patient makes no financial sacrifice to obtain it. The opposite state of affairs leads merely to a reduced chance of success.

Type of Condition Suitable for Psychoanalysis.

The illnesses which are most suitable for psychoanalytical treatment are, as is well known, the psychoneuroses. It is as well, however, to note the fact that there is a common condition known as anxiety neurosis, which is distinct from the psychoneuroses, though often confused with them. The distinction is made because anxiety neurosis is caused physiologically and not psychologically as are the psychoneuroses.

Anxiety Neurosis.

Anxiety neurosis is the result of unsatisfied sexual desire. The commonest examples of this illness are found among married women who repeatedly submit to sexual intercourse, but do not attain the orgasm; anxiety neurosis, however, may occur in anyone who is repeatedly stimulated sexually without ensuing gratification. This condition of affairs leads to feelings of anxiety or, alternatively, to symptoms which constitute a physiological expression of that emotion in the form of such phenomena as palpitation and tremulousness.

Interference with attainment of the orgasm may be brought about by anatomical abnormalities or by ignorance concerning the art of sex-love. The former may sometimes be corrected surgically, but sexual ignorance is usually due to prudery, itself a psychoneurotic sympton. This being the case, it follows that though anxiety neurosis is an entity distinct from psychoneurosis—that is an "actual neurosis"—it is, nevertheless, usually complicated by association with an underlying psychoneurotic state.

When, therefore, a woman suffers from frigidity (the term applied to the state of incomplete gratification) or a man from impotence, psychoanalysis is the only treatment which will remove any underlying psychoneurotic cause, and surgical treatment of any anatomical defects that happen to be present in such complicated cases of anxiety neurosis is likely to have very little effect if relied upon entirely.

The Psychoneuroses.

There are three principal varieties of psychoneuroses which, being due to the persistence in the unconscious of the fixations of infancy, are accompanied by mental conflict between the ideals of the patient and his repressed urges.

The mental conflict, which occurs to a varying degree in all cases of psychoneurosis, gives rise to such symptoms as worrying, irritability and insomnia. These symptoms may be increased in severity if real difficulties exist in addition to the unconscious ones.[1]

Anxiety Hysteria.—Psychoanalysts apply the term anxiety hysteria to the type of psychoneurosis in which the predominant symptom consists of fear of certain objects or situations—agoraphobia being a common example.

[1] For detail, see "The Diagnosis of Neurotic Conditions in General Practice", D. Forsyth, *The British Medical Journal*, 1932, page 370.

Anxiety hysteria depends upon fixations which were formed during the genital phase, and, since this is the last one through which the child passes, anxiety hysteria is the least serious of the three varieties of psychoneurosis. In anxiety hysteria the unconscious anxiety associated with regression to the appropriate fixation has been transformed into conscious fear.

Pure cases of anxiety hysteria are uncommon. It usually exists in combination with one or both of the more serious psychoneuroses, namely, conversion hysteria or obsessional neurosis. Persons suffering from uncomplicated anxiety hysteria may be analysed within one year.

Conversion Hysteria.—Freud applies the term conversion hysteria to cases in which unconscious impulses have been converted into physiological symptoms, such as analgesia.

The diagnosis of conversion hysteria used to be made because the symptoms found in a particular patient did not conform to those of any known physical syndrome, and because no objective evidence of organic disease could be observed.

Certain hysterical symptoms, such as analgesia, blindness, and deafness, may be diagnosed (when malingering has been eliminated) from evidence obtained by using the psychogalvanometer, but, in the absence of such tests, conversion hysteria should merely be suspected, even when one or more of the symptoms of mental conflict exist in addition to the physiological symptom.

On the other hand, the diagnosis of conversion hysteria should not be excluded merely because definite evidence of organic disease is obtainable, because both conditions may exist concurrently. In fact, conversion hysteria is often superimposed on an organic lesion, because this has a conditioning effect in localizing the conversion of unconscious anxiety.

Fixations at the genital level are responsible for conversion hysteria, as they are for anxiety hysteria, but because the unconscious anxiety is expressed physiologically in the former condition, patients suffering from conversion hysteria are more difficult to analyse than are those with anxiety hysteria.

Obsessional Neurosis.—The term obsessional neurosis is applied to the variety of psychoneurosis in which the patient is compelled to perform certain actions, or to think in a particular manner. He is often unaware of the compulsion to act, or the obsessional nature of his thinking; but sometimes the actions or thoughts are so bizarre that the individual recognizes them to be "silly", and is yet unable to do more than postpone the fulfilment of his impulse. The play of children is often of a compulsive nature, an example being the game of avoiding treading on the dividing lines of a pavement. "*Folie de doute*" is an example of compulsive thinking. In this type of obsessional case the patient feels doubtful whether he has performed such a simple act as shutting a door, and is usually compelled to retrace his steps in order to find out.

It is only when compulsions interfere markedly with his life that an individual seeks treatment, but if a patient's symptoms include mental conflict and it is impossible to classify his psychoneurosis as either an anxiety hysteria or a conversion hysteria, his behaviour should be carefully observed for indications of compulsion neurosis (an alternative name for obsessional neurosis) as this variety of psychoneurosis is, when mild in degree, the most difficult to diagnose.

Obsessional neurosis is due to fixations at the late anal level, and is accordingly the most resistant type of psychoneurosis, even for psychoanalytical treatment.

Psychotic Complications in Psychoneurotics.

Severe grades of psychoneurotic illness are often accompanied by mild degrees of psychotic reaction, obsessional neurosis especially.

Among these cases are the patients who discontinue analysis during the negative phase, and thus make a permanent analytical result impossible. In fact, some are so pronouncedly psychotic that they are incapable of taking a friendly attitude to the analyst even in the early period, and do not attend for more than a few sessions.

In cases of psychoneurosis complicated by psychotic manifestations, the patient has never satisfactorily passed the critical point in development, and, in consequence, possesses a less complete appreciation of reality than does even an obsessional neurotic.

This being the case, if psychoanalysis is not discontinued, it is much more protracted in such individuals than in sufferers from uncomplicated psychoneurosis.

The psychogenic insanities are three in number: (i) paranoia, (ii) manic-depressive psychosis, and (iii) schizophrenia. As their severity is in the order named, it follows that a paranoid psychoneurosis is more amenable to psychoanalysis than one complicated by the severer grades of psychosis.

Prophylactic Analysis.

It should be obvious that the severer types of psychoneurosis, especially those complicated by psychosis, would respond to psychoanalytical treatment much more completely if an analysis were made during childhood, that is, before the symptoms have become habitual.

It should be noted that the analysis of children requires a special technique, in which "free-play" largely replaces free-association, a method introduced by Mrs. Melanie Klein.

It has been found that it is difficult to recognize the existence of psychosis during infancy, but it has been observed that children who suffer from the severest types of obsessional neurosis are likely to become psychotic in later life. This being the case, such children should be analysed as a preventive measure.

The aim of psychoanalysis is to render unconscious anxiety conscious, so that the fixations responsible for the anxiety may be removed and sublimation be made possible. In practice this has been found extremely difficult, not only in psychoid neuroses, but also in other psychogenic illnesses such as drug addictions, perversions, mental deficiency (non-organic) and criminality, because, in these conditions, the sufferer relieves his unconscious anxiety by turning his phantasies into reality.

This being the case, these illnesses also are best dealt with by prevention, that is, by the analysis of "problem children", many of whom would otherwise adopt these methods of overcoming their unconscious anxiety in later years. In addition to the prophylactic analysis of problem children, a time will probably come when so-called normal children will receive this boon as part of their education.

If such a programme were carried out, there would arise a class of parent who, having been freed of fixations in childhood, would not cause fixations in their children. The civilization that would ensue would be as different from the present civilization as this is different from that of our primitive ancestors, which might well be described as psychotic, in that it was based on a less complete appreciation of reality than is our own.

This being so, it would surely not be inaccurate to describe western civilization as psychoneurotic in type, being the product of individuals among whom the majority are in some degree suffering from psychoneurosis.

The possibility should be considered, therefore, that antagonism to psychoanalysis may be, itself, a psychoneurotic symptom, in other words, an expression of obsessional doubting, a condition which, when pronounced, is referred to as "*folie de doute*".

Summary.

1. The majority of illnesses are psychological in origin.

2. The unconscious part of the mind may be compared with the forces below the surface of a volcano, the eruptions of which correspond to the psychoneuroses.

3. Unsatisfactory conduct by mothers of lactation and defæcation causes a sadistic expression of the Œdipus complex in their children. Fixations ensue which are accompanied by unconscious anxiety due to fear of retaliatory punishment. "The fixations of the parents shall be visited upon the children unto the third and fourth generation except when interrupted by psychoanalysis."

4. As a psychoanalyst must relearn the language of symbolism, it follows that a training analysis saves a candidate much valuable time. A radical analysis takes three years, but a palliative analysis will relieve symptoms, sometimes in one session, but usually in a few months, and is more effective than any other form of psychotherapy.

5. The psychoneuroses are the most suitable cases for psychoanalysis. Anxiety neurosis, which is not a psychoneurosis, but physiological in origin, rarely exists, however, without an underlying psychoneurotic condition. The three varieties of psychoneurosis are described: (i) anxiety hysteria, (ii) conversion hysteria, and (iii) obsessional neurosis.

6. Cases of psychogenic insanity could be prevented if all "problem children" were analysed, as could drug addictions, perversions, psychogenic mental deficiency, and even criminality also. In fact, so-called normal children should also receive prophylactic analysis, as the majority (if not all) are actually psychoneurotic.

THE OATH OF HIPPOCRATES AND ITS USE AT THE PRESENT DAY.

By J. G. AVERY, M.B., B.S. (Melbourne),
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HIPPOCRATES lived from 460 to about 370 B.C., and from that time onward there has survived the tradition of an oath, believed to have been composed by him, to which his pupils were required to subscribe, and to which many succeeding generations of physicians have since subscribed. Even at the present day medical graduands in some of the universities of the world are required to take an oath, or to make a declaration, in terms similar to, or on lines suggested by, this ancient oath.

The Oath is one of a collection of Greek writings, some seventy in number, usually called the Hippocratic Collection or the Hippocratic Corpus, the text of which is found in manuscripts written in the tenth century A.D. and subsequently. Earlier manuscripts are lost, though lists of titles and annotations and commentaries on the works exist. Thus Galen (A.D. 131–201) wrote commentaries on at least twenty, and mentioned fifteen others. Erotian, a lexicographer of the time of Nero (Emperor A.D. 54–68), gives a list of seventy works, and mentions the Oath as being among the genuine writings of Hippocrates. Disagreement occurs amongst the ancient authors as to their actual authorship, and so does it occur amongst the modern. Indeed some have gone so far as to say that Hippocrates wrote nothing; but others, after intensive study of the manuscripts themselves and of the evidence, both internal and external, have come to the conclusion that a few of the works in the Hippocratic Collection bear the stamp of an outstanding personality; the style is dogmatic, the prose is dignified and correct, the subject matter is concerned only with observed facts and the conclusions to be deduced therefrom, there being no trace of superstition or philosophical speculation. This personality may well have been Hippocrates himself.

It is believed that the Hippocratic Collection is the remains of the library of the medical school of Cos, and consists of the works of medical writers before, during and after the time of Hippocrates, of clinical notes, notes for lectures, and so on. To anyone reading them this is a very reasonable suggestion.

The Oath is amongst those attributed to Hippocrates, but the many questions concerning it cannot be answered with certainty. Was it actually written by him, or did it exist before his time? To whom was it administered, and in what manner? Was it really administered at all, and for what reason? The possible answers to these queries are to be found in "The Doctor's Oath", by Dr. W. H. S. Jones, M.A., of Cambridge, which is a list of the manuscripts in which the text of the Oath occurs, with descriptions and translations thereof, and a scholarly essay on the subject of the Oath; and in "Hippocrates", in four volumes, three of which are by the same author, and one by Dr. E. T. Withington, of Balliol (Loeb Library).

In and prior to the time of Hippocrates the best medical knowledge and practice were in the hands of an hereditary class or clan, the Asclepiadæ. They claimed their descent from Asclepios, and Hippocrates himself was stated to be of the seventeenth generation. They represented the best class of Greek physician of the times. Their knowledge was handed down from father to son, or to other male members of the family, and was rather jealously guarded. For in a time when there were no examinations or tests to be passed, no degrees to be obtained, and no laws for the protection of medical men, it was only to be expected that there would exist many types of practitioner. First among these were the priest-physicians of the temples of Asclepios. These would tend to ascribe disease to the wrath of the gods, and cures to divine favour, that is, superstition would form a large part of their medical beliefs, and probably faith-healing played a part in producing results, just as it does today. Grateful patients usually offered a votive tablet or the sacrifice of a bird as a thanksgiving for their recovery. There was a temple to Asclepios at Cos itself; and are we not told that Socrates, who was executed in Hippocrates's lifetime, said to Crito before his death: "Crito, we owe a cock to Asclepios; see that that debt is paid." Perhaps old Socrates, for all his wisdom, preferred the faith-healer to the orthodox healer; but perhaps then the faith-healers were orthodox, and the new modern schools were not yet in full favour.

When philosophy played its great part in moulding the thought of the Greeks, life and its vital functions and disease came within the scope of its speculations. Medical phenomena were made to fit the pet theory of each philosopher; and as all the Greeks were interested in philosophy, and as the step from theory to practice would not be a difficult one, it may easily be understood that quacks of all kinds would flourish, as indeed they did. The Hippocratic writings are full of allusions to them.

But by the end of the fifth century B.C. a rationalistic tendency had grown up in the best medical thought, superstition was discarded, speculation was giving way to scientific methods of observation and deduction; and although medical knowledge was still in a crude state, certain schools and teachers were becoming famous for their new teachings. Naturally students would be attracted. The school at Cos, made famous by Hippocrates and his forbears, was one of these, and was conducted by Asclepiadæ. But as students who were not of the Asclepiad families sought instruction, it became necessary to insure that they would preserve the traditions of the school and of the profession they were about to enter. They would be required to sign an indenture, probably to study for a certain fixed period, and to pay the necessary fees; and also to take the Oath, in the terms with which we are familiar. It would be very necessary, in times such as those, for a practitioner of the Asclepiad class to be able to recognize any other member of his own class, in order to enable him to distinguish the genuine from the quack; and probably this necessity gave rise to the introduction of a number of secret words, or perhaps signs, by which members could recognize other members of their profession or school, when they met them in consultation. This is conjectural, but it affords a possible explanation of the obscure phraseology of some of the Hippocratic writings.

The Oath itself does not seem to have been a secret matter, and a possible explanation of this may be that Hippocrates desired the world to know the high reputation of his school, and to know that his trainees were honourable men, a class above the common quack, men who would not be accommodating when an abortion was required, who would not supply poison for a fee, who could be depended upon not to gossip about the affairs of their patients, and to whom the honour of female relatives and dependants could safely be entrusted. A better way of raising the reputation of the profession could hardly have been invented.

The ancient pagan Oath was modified early in the Christian era to conform to the new beliefs; but it is believed that, apart from these modifications and the almost certain alterations that must creep into manuscript writing, the text of this old Oath is the same as when the Father of our Profession himself first used it.

Three manuscripts give the Oath in a form "such as a Christian may take", and one seems to combine the pagan and Christian forms.

In the earlier literature there are only a few references to the Oath. The first is in the preface of Scribonius Largus, a medical writer of the time of Claudius (Emperor A.D. 37–54), in which he says that Hippocrates began his instruction with an oath in which the practice of abortion was forbidden. The next is in Erotian, previously mentioned. Galen does not mention it. Jones believes that there is a much earlier allusion in a play of Aristophanes. In it occurs the following dialogue between Euripides and Mnesilochus:

> Eur: I swear then by æther, the abode of Zeus.
> Mne: Why, rather than by the community of Hippocrates?
> Eur: I swear, then, by all the gods wholesale.

A reference to the opening words of the Oath, in which all the gods and goddesses are invoked, suggests that Aristophanes had in mind this Oath and no other, and it is very tempting to believe that such was the case. The play was produced in 411 B.C., when Hippocrates was in his fiftieth year, and widespread indeed must have been his fame and that of his school at Cos, if at that comparatively early period of his history the Athenian public was so well acquainted with the terms of the Oath that Aristophanes could raise a laugh at his, and its, expense. It would show at least that the terms of the Oath were not at all secret. Some authorities believe that the reference is not to the great Hippocrates, but there could hardly have been two Hippocrates associated with such a characteristic allusion. Nineteen years before, the great plague of Athens had occurred, and if history is to be believed, Hippocrates had earned the undying gratitude of the Athenians by his services in staying that epidemic. No doubt at the later date his fame was at its zenith.

The pagan Oath runs as follows (Jones's translation):

I swear by Apollo physician, by Asklepios, by Health (Hygeia), by Heal-all (Panaceia), and by all the gods and goddesses, making them witnesses, that I will carry out, according to my ability and judgement, this oath and this indenture:

To regard my teacher in this art as equal to my parents; to make him partner in my livelihood, and when he is in need of money to share mine with him; to consider his offspring equal to my brothers; to teach them this art, if they require to learn it, without fee or indenture; and to impart precept, oral instruction, and all the other learning, to my sons, to the sons of my teacher, and to pupils who have signed the indenture and sworn obedience to the physician's Law, but to none other.

I will use treatment to help the sick according to my ability and judgement, but I will never use it to injure or wrong them.

I will not give poison to anyone though asked to do so, nor will I suggest such a plan. Similarly I will not give a pessary to a woman to cause abortion.

But in purity and holiness I will guard my life and art.

I will not use the knife either on sufferers from stone, but will give place to such as are craftsmen therein.

Into whatsoever houses I enter, I will do so to help the sick, keeping myself free from all intentional wrongdoing and harm, especially from fornication with woman or man, bond or free.

Whatsoever in the course of practice I see or hear, or even outside my practice in social intercourse, that ought never to be published abroad, I will not divulge, but consider such things to be holy secrets.

Now if I keep this Oath and break it not, may I enjoy honour, in my life and art, among all men for all time; but if I transgress and forswear myself, may the opposite befall me.

Analysing shortly the subject matter of the above, the first clause is an invocation of the deities, principally those presiding over health and healing. The next several clauses confine the teaching of medicine to members of the Asclepiad family and to regularly indentured students; and also the inculcation of generous sentiments towards their teachers. The next three clauses insist on the careful and conscientious use of treatment solely for the benefit of the patient, not to his detriment, the misuse of poisons and the practice of abortion being especially mentioned. The insertion of these two suggests that these practices were rife in those times. The following clause is of general ethical nature. Next comes the famous Operation clause, forbidding lithotomy. It is peculiar, and may have been a later interpolation, for it does not appear that the Hippocratic doctors avoided all operations. But it is possible that even at that era there was a class of lithotomists, like those of a later date, and that Hippocrates, in truly ethical fashion, did not desire his followers to encroach on the preserves of an already established class. Next follows a clause which is practically a repetition of a previous one, with an additional precaution against illicit relationships with patients, both bond and free. When we consider what must have been the position of the bond-slaves of those days, this insistence on the respect and preservation of their chastity is remarkable evidence of the high moral standard required by Hippocrates. Then comes the Secrecy clause, a very comprehensive one, no doubt, in those times; and the Oath ends with a supplication.

The earliest known Christian form of the Oath varied from the pagan in several particulars. First the invocation of the Deity was substituted, as might have been expected; secondly, no mention of a ban on operations is made; thirdly, abortion was more stringently forbidden, the use of "treatment either from above or from below" being specifically mentioned, thus preventing the use of abortifacient drugs as well as of manual interference; and lastly, there is no obligation to keep the teaching and practice of medicine in the hands of a particular class.

It is interesting to note that in the original manuscripts the Christian Oath is written in the form of a cross; and it is not too much to suppose that the early Christian doctors took their oath with a copy of it in their hands.

During the ages the Oath has become much modified, and has fallen largely into disuse; many medical schools make no use of it at all; a very few still use the ancient Oath; some employ a modified form; and still others use oaths in which the spirit of the Oath of Hippocrates is barely recognizable.

Present-Day Usage.

It is still common to hear the expression that such and such a procedure is contrary to the terms of the Hippocratic Oath; and it is also common knowledge that the public believes that doctors are bound by some such oath to keep their patients' secrets inviolate, even in a court of law. But indeed the contrary is true. For whilst some of us are not, or were not, even made familiar with the text of the Oath in the course of our training, very few of us are actually bound by any oath or declaration to respect our patients' confidences, or even to comport ourselves as becomes the members of an honourable profession. True, many universities include in their curriculum a short course of lectures on medical ethics; and some make their students familiar with the text and significance of the Hippocratic Oath; and most graduates enter their public life with a good knowledge of the duties they owe to their fellow-practitioners and to the public. But so far as the actual taking of any oath is concerned, it must rather regretfully be admitted that the practice is almost obsolete.

To quote Jones:

The age of oaths and tests is passing away. They tend to become optional, and then to disappear. But they have, nevertheless, played a great part in the history of man's moral uplifting. Oath must have contributed much to form a high code of medical honour, even in those ages when it was no longer a test to which the graduating physician subscribed. At the present day medical ethics and medical etiquette are based upon it. Like his Hippocratic predecessors, the modern doctor refuses to shorten life, to cause abortion, and to divulge information committed to his honour; and even though doctors no longer form a brotherhood with communistic principles, they still attend the families of their fellow practitioners without charging a fee.

In order to ascertain to what extent the Hippocratic Oath still lingers in our modern age, and to what extent the original phraseology and clauses of the pagan Oath are still in use, I have made some inquiries. They were limited to the use of the Oath at graduation only. Some of my correspondents offered the information that a course of lectures in ethics or medical history was in use at the university concerned, in which the Oath was explained to the students;

or that a copy of the Oath was always on view in a conspicuous position in the medical school; or that the Oath was required from candidates for the higher degrees. But with these aspects of the matter I am not so particularly concerned, though I shall mention them.

Of forty-one universities in the British Empire which confer medical degrees, only ten make use of any form of oath.

In Edinburgh, the *Sponsio Academica*, in Latin, is administered prior to the graduation ceremony, and each graduand signs it in a special book. It consists of a promise to practise the art of medicine with care and purity of conduct, faithfully to attend to everything conducive to the welfare of the sick, and to preserve professional secrecy; and it begins with an invocation of the Deity, and ends with a supplication.

At Aberdeen, graduands make a declaration during the ceremony of graduation, in English, in general terms somewhat similar to those of Edinburgh, but not including the secrecy clause, and with no invocation or supplication.

Glasgow uses an oath in English consisting of a promise to practise medicine for the safety and welfare of the sick, not to do or administer anything hurtful or prejudicial to them, and to maintain professional secrecy. It thus incorporates three of the items of the Oath. It is read aloud by the dean, and the graduates signify their assent by raising the right hand.

In Canada, Queen's University, Ontario, makes use of a declaration very like that of Glasgow. McGill University, Quebec, uses the Latin oath of Edinburgh, while Dalhousie University, Nova Scotia, makes use of an English translation of it. Laval University, Quebec, and the Université de Montreal have an oath for the degree of Doctor of Medicine, the former in Latin, the latter in French; the former bears no resemblance to the ancient Oath, while the latter is only vaguely reminiscent of it. The University of Western Ontario has an oath that closely resembles the Oath in its wording. It is identical with that employed in some of the American universities. A copy of it, on parchment, is presented to every candidate, who signs it in the presence of witnesses.

Turning to South Africa, Witwatersrand University employs a declaration closely resembling that of Glasgow, with additional clauses against secret remedies and secret methods, and against advertising directly or indirectly. In these respects it is unique. The Scotch influence is as apparent in South Africa as in Canada, for the University of Cape Town uses a Scotch declaration, that of Aberdeen, *in toto*.

In none of the universities of England, Wales, Ireland, India, Australia, New Zealand, nor in Hong-Kong, nor in Malta is any oath in use at graduation.

In the United States of America an oath is used in about the same percentage of the universities as in the British Empire, namely 25%. Of sixty-four medical schools or colleges, fourteen use an oath either during the graduation exercises or prior to them, in terms which very closely resemble those of Hippocrates; one or two of these actually use the ancient Oath in its entirety, the candidates affirming their allegiance to the spirit, if not to the letter, of it. The names of these universities are: Columbia University College of Physicians and Surgeons, Cornell University Medical College, Long Island College of Medicine, The College of Medicine of Syracuse University, New York University and Bellevue Hospital Medical School (all these of New York), The Jefferson Medical College of Philadelphia, The University of Cincinnati, and the Medical College of the State of South Carolina. They all use very much the same form, which I shall quote.

The Woman's Medical College of Philadelphia, The University of Kansas, The State University of Iowa, The University of Georgia, and the New York Homeopathic Medical College use the original pagan form. The first two omit the abortion clause. Wayne University, Michigan, uses a much more modified form. The University of Rochester and the Hahnemann Medical College of Philadelphia administer the oath to a graduating class only if the class requests it.

I quote that in use at Columbia University, with the preamble:

> In our profession it is a custom, established more than 2,000 years ago, that no one may be admitted to its honours, who has not first expressly taken upon himself its obligations. Now, therefore, in behalf of your elders, I call upon you to take, as we have taken before you, the oath which bears the name of Hippocrates. The language in which our predecessors first pronounced it is no longer spoken, the very gods whom they called to witness have been discarded, but still we can find no nobler words than the most ancient in which to hand down the traditions of our calling.
>
> You do solemnly swear, each man by whatever he holds most sacred:
>
> That you will be loyal to the Profession of Medicine and just and generous to its members.
>
> That you will lead your lives and practise your art in uprightness and honour.
>
> That into whatsoever houses you shall enter, it shall be for the good of the sick to the utmost of your power, you holding yourselves far aloof from wrong, from corruption, from the tempting of others to vice.
>
> That you will exercise your art solely for the cure of your patients and will give no drug, perform no operation for a criminal purpose, even if solicited; far less suggest it.
>
> That whatsoever you shall see or hear of the lives of men which is not fitting to be spoken, you will keep inviolably secret.
>
> These things you do swear. Let each man bow the head in sign of acquiescence.
>
> And now, if you will be true to this, your oath, may prosperity and good repute be ever yours; the opposite, if you shall prove yourselves forsworn.

This is the form of oath that is in use also at the University of Western Ontario, Canada, and it will be seen that it contains, in some form or other, every one of the items or clauses of the ancient Oath.

Forty-eight American universities do not utilize any oath at graduation, but in at least sixteen of them the Oath is learned or lectured upon, and in some a copy of it is presented to each student. I am informed that many of the medical student societies administer the Oath to their members on joining; and there exists in the United States of

America an honorary medical fraternity, name the Alpha Omega Alpha, initiates into which must subscribe to the Oath. Of course every graduate in America receives a small booklet entitled "Principles of Medical Ethics", which is presented to him with the compliments of the American Medical Association.

In France only one university out of eight, the Catholic university of Lille, imposes an oath on those about to graduate. This is performed during the course of a mass celebrated on the anniversary of the faculty. Each of the fifth year students advances to the altar and reads the text of the oath aloud and assents to it. It is rather long, and a note to the printed copy states that several of the texts are borrowed from the Oath of Hippocrates. At four other French universities, namely Montpellier, Toulouse, Lyons and Strasburg, a modified oath is read and assented to by each candidate who presents successfully a thesis for the degree of Doctor of Medicine. It, too, contains several of the clauses of the old Oath.

In Holland, every graduate swears (or promises) to practise medicine, surgery and obstetrics according to statutory regulations, and to observe professional secrecy, unless required by law to divulge his knowledge. This is done before the president of the examining board, but apparently there is no public ceremony.

In Copenhagen candidates take an oath before the Dean of the Faculty, and sign a register. The oath is in rather general terms of good behaviour, care of the sick poor as well as of the rich, and includes a secrecy clause.

In Norway, a very short declaration is signed, with no resemblance to the phraseology of the Oath.

Austrian graduands for the degree of doctor take an oath in Latin, in very general terms; and a similar one is used for the same purpose in Budapest, presumably in Hungarian. It does not much resemble the ancient Oath, but includes a secrecy clause. Indeed this clause is the one which is most common to all forms of modern oaths or declarations, and is the outstanding feature.

Polish graduands take an oath, in Polish, which contains three or four of the original clauses.

At the Charles University, Prague, is used the same Latin oath as in Austria, for Doctors of Medicine.

Of four Swiss universities, two French and two German, only one, that of Basle, uses an oath for the degree of Doctor. The only clause in it taken from the Oath is that concerning the care of the sick.

In Germany the Hippocratic Oath was abolished some sixty or seventy years ago; and in Belgium, Italy, Spain and Portugal no use is made of it, so far as my information goes. Neither does the Pennsylvania Medical School of St. John's University, Shanghai, nor the Peiping Union Medical College utilize it.

At the American University of Beirut, Syria, a pledge is required from graduates in medicine, dentistry and pharmacy, and from midwives and graduate nurses. That for medical men contains several of the clauses of the Oath in a modified form, and is evidently modelled on that previously quoted as in use at some of the leading American universities.

Lastly Athens, where if anywhere one would expect to find the tradition still lingering, candidates for the Doctorate take an oath in modern Greek, which includes in some form or other practically all the clauses of the Oath. The operation and abortion clauses are only represented by the words: "I promise that I shall not hazard life by rash experiment." The language throughout is dignified.

The universities in several other countries have not to date answered my inquiries, but enough has been written to show that in most countries of the world the administration of an oath to medical men at their first graduation is obsolete. In some of the remainder, where the custom still exists, the Oath of Hippocrates has been the model; while in others the form that has been substituted is of alien growth, though no doubt the idea of any ethical declaration at all is rooted in this ancient example. If we include those countries in which its use is confined to the higher degrees, the number rises considerably. But this practice seems to me to be an anomaly. Why an oath is required of a few candidates for higher degrees, who, *ipso facto*, would be expected to be more conversant with the ethics of the profession, but is not required of their humbler brethren, who form the majority, passes my understanding. Apparently the Oath has here degenerated into a mere interesting interlude.

It seems a pity that this impressive and picturesque ceremony should be allowed to fall entirely into disuse. Possibly it will not, and indeed the replies of one or two of my correspondents would seem to indicate that interest in its use may be undergoing a revival. In this modern age, when there seems to be a tendency to doubt the sincerity of the motives of the profession, the question might well be asked: "To what extent has the abolition of use of the Hippocratic Oath contributed to this lack of confidence?" Perhaps very little; but even if very little, would that little be worth regaining? If a public profession of faith or of moral undertaking is of any value at all, either for its appeal to the conscience of those who profess it, or for its favourable impression on the minds of those who witness it, surely it is worth practising.

But even if the ritual of the Oath is languishing, its spirit is far from dead; and as long as the profession of medicine is an honourable one, and as long as there is any reverence left in human nature for the old and beautiful, this venerable "counsel of perfection" will hold a prideful place in the affectionate esteem of medical men.

Acknowledgements.

I have to thank all my correspondents for their courteous replies; the Consuls in Brisbane for Holland and Greece and the Vice-Consul for Denmark for translations and for other help; and Mr. W. D. Francis, Dr. Battaglia and Mr. H. V. Byth, M.A., of this city, for translations from the German, Italian, Latin and Greek.

Reports of Cases.

A STRANGULATED INGUINAL HERNIA IN AN INFANT THREE WEEKS OLD.

By T. H. SMALL, M.B., Ch.M. (Sydney),
Woollahra, New South Wales.

BABY W.L. was twenty-two days old on March 10, 1935, and had been a perfectly healthy breast-fed baby.

At 8 p.m. he began to cry suddenly and cried all night. He vomited after the 6 a.m. feed and was given half a teaspoon of castor oil. He passed a small blood-stained motion after vomiting the 9 a.m. feed. The mother noticed a swelling in the left groin when bathing him. When seen at 10.30 a.m. on March 11 he was still crying and had a tender, tense swelling in the left inguinal region, opaque to transillumination and about the size of a walnut. His abdomen was distended; no sausage tumour could be felt; rectal examination revealed nothing abnormal.

He was seen by Dr. P. L. Hipsley, and operation through a mid-line incision revealed a strangulated inguinal hernia and excluded associated intussusception.

The hernia was reduced through an inguinal incision and repair of the abdominal wall was performed. The left testicle was black and the loop of bowel dark plum coloured, but was considered viable, although it had been strangulated for twenty-three hours.

The patient developed paralytic ileus and vomited intestinal contents for three days. On the fourth day the bowels were opened and flatus and fæces passed after an irrigation. Saline solution was given by the subcutaneous route from time to time.

The abdominal wound became gangrenous from pressure of the anchor dressing. It was strapped and subsequently healed. An abscess in the left groin and scrotum was evacuated. Capillary bronchitis occurred, but the patient successfully weathered this also. He has since put on weight rapidly, but the left testicle has atrophied.

The case is of interest in view of the age of the infant and the family history of inguinal hernia on the maternal side. The mother's father had inguinal hernia, as also did his mother, one sister and his brother. The mother's two brothers had inguinal hernia.

Reviews.

CHRISTINE MURRELL.

LIVES of great men have their part to play in stimulating those that come after, and this is no less true when it is a woman's life that occupies our attention.

"Christine Murrell, M.D.: Her Life and Her Work" is a sketch of one whose life was full of cheerful energy, of high endeavour, and of sound statesmanship; the statesmanship was directed especially to the medico-political work of the British Medical Association.[1] The biography is written by one whose personal knowledge was slight, but she has done her best with the somewhat limited material at her disposal.

A short account of Christine Murrell's youth is hardly to be regretted; some biographies are overloaded in this respect. Her personality is considered in relation to her medical work, which was that of a general practitioner, with special knowledge of psychology and mental illness, an unusual combination at the time when she began practice in 1903.

Her attitude towards feminism is defined. It was that of a broad-minded and sane woman who would do and have the best for her sex, but who saw life whole, and knew that the best work was done by men and women in cooperation. The work she did during the War is touched on, and her other activities, her friendships, her mode of life *et cetera* are described, the biographer seeking as far as possible to present a picture of the woman herself.

Her directorship of a business to manufacture machinery for bookbinding—an unusual post for a woman to hold—gave scope to her organizing capacity, and her training in health problems made her efforts to improve the well-being of the employees most effective. Her unique achievement was, however, in the medico-political sphere; she was elected successively Chairman of her Division, President of the Branch, and then each year for seven years a member of the Council of the British Medical Association, being the first woman to hold this latter position.

In 1933 came her crowning achievement: she became a member of the General Medical Council. The full force of this may be realized when one remembers that it was only in 1876, after a fierce struggle, that women gained the right to enter the medical profession in England.

When Dr. Murrell heard of her success, when everyone was acclaiming the election of the first woman member of this body, she knew that she would never take the place she had won. The result of the voting was announced at the end of July; she died in October, 1933. Christine Murrell stands a gallant figure, a successful physician, a loyal and trusted friend, a good worker and fighter for the best things in the profession. As the author says: "The task of her forerunners was to establish the right of women to enter the profession. There remained the harder task of proving that they could be of value to it. It was this task which Christine Murrell accomplished with paramount success."

[1] "Christine Murrell, M.D.: Her Life and Her Work", by C. St. John, with preface by Lady Barrett, C.H., C.B.E., M.D., M.S.; 1935. London: Williams and Norgate, Limited. Demy 8vo, pp. 152. Price: 5s. net.

A BOOK ON DIAGNOSIS.

IN spite of the existence of a few rare individuals whose prowess is popularly attributed to intuition or a heaven-sent gift, it is wiser to regard diagnosis as a science. "Physical Diagnosis", by Elmer and Rose, is a well-balanced statement of the necessary knowledge and the technique of its application.[1] The subject is very big and throughout the authors seem to have the limitation of space constantly in mind. To this, maybe, are due a compressed style and, what is quite as rare in American publications, few superfluous illustrations.

The arrangement of the book is good. The first three chapters deal with topographical and clinical anatomy and physiology and the next three with "Preliminary Observation". There follow nine chapters on "Inspection" of the various parts of the body in turn; the account of the points to be noted in the inspection of the head, face and inside of the mouth alone occupies some thirty pages. Succeeding sections describe exhaustively the technique and methods, physics and physiology, clinical significance and pathology, and the signs and phenomena of and relative to palpation, percussion, auscultation, the examination of sensation and reflexes and special diagnostic procedures. Part I concludes with special articles on "Radiology in Physical Diagnosis", by Dr. Sharwood Moore, and "Electrocardiography", by Dr. Drew Luten. Part II deals with "Physical Diagnosis of Diseases of the Respiratory and Circulatory Systems".

"Physical Diagnosis" is a first class production. The illustrations—to a large extent very good photographs—are clear and to the point. The style is simple and direct. We can recommend this book as among the best of its kind both to the conscientious student for concentrated study and to the practitioner as a "refresher".

[1] "Physical Diagnosis", by W. P. Elmer, B.S., M.D., and W. D. Rose, M.D.; 1930. St. Louis: The C. V. Mosby Company; Melbourne: W. Ramsay. Royal 8vo, pp. 903, with 337 illustrations. Price: 50s. net.

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TEACHING AND TEACHERS OF MEDICINE.

In a recent inaugural lecture that has been issued in pamphlet form,[1] Dr. John A. Ryle, Regius Professor of Physic in the University of Cambridge, had a great deal to say about specialism and specialists, the meaning of clinical science, and the divorce of the ward from the laboratory. These are the obvious subdivisions in an address which is so wise and so temperate that we should like to see it reprinted in every medical journal in the English-speaking world. But apart from these obvious matters Professor Ryle touches upon others that may be elaborated. He refers briefly to systems of education and examination and to the advantages that come to a teacher in general medicine.

The aims of medical science, in the words of Professor Ryle, are to increase and perfect our knowledge of disease in man (a definition that might be given by any medical graduate) and equally our knowledge of man in disease (a complement that would very often be forgotten). Within the ranks of every profession there are those who have lost sight of their early objectives, who have forsaken the scientific method, and who have deviated from the path of ethical rectitude. There are, fortunately, many who have done none of these things; there is, however, a group of those whose intentions are good, but who are, for various reasons, incapable of carrying them out. As Professor Ryle puts it, there remains too great a proportion whose standards of accuracy, whose use of evidence and whose critical faculties are defective, whose judgement is continually crippled, rather than gradually amended, by the inherent difficulties of their subject and the exacting conditions of their lives. "The objects of their task are more or less apparent to them, but their use of the tools which they bring to it is clumsy or the tools themselves are inappropriate." Among the reasons which Professor Ryle offers for this state of affairs is one with which he does not deal in the remainder of his address: he states that our systems of education and examination — although reforms are pending — have become too complicated and unwieldy, our instruction too uncorrelated and departmental, too insistent on the acquisition of knowledge without provision for its proper distribution and assimilation. Without concerning ourselves at all with the other reasons offered by Professor Ryle, we must admit that there is a certain amount of truth in this general statement. Reformers will at once say that the fault lies in the present-day curriculum, and they will set about reorganizing the type of instruction that they think should be given (in lectures or at the bedside), the number of hours that should be allotted to each subject, the size of the classes, and so on. They very seldom take stock of the teachers—whether they are fit to do their work, whether they are trying to do their work, whether they are trying to keep themselves from becoming lax and languid.

When reference is made to teachers in medicine, it is necessary to point out that the term is not applicable only to those who hold university appointments. Every member of the honorary staff of a teaching hospital who has students allotted to him is a teacher in medicine. Most medical graduates have grateful memories of physicians and

[1] "The Aims and Methods of Medical Science: An Inaugural Lecture", by J. A. Ryle, M.A., M.D., F.R.C.P.; 1935. Cambridge: The University Press; Melbourne: S. Jaboor. Crown 8vo, pp. 44. Price: 2s. net.

surgeons who, understanding the mind and appreciating the needs of the student, spared neither time nor trouble to give him of their best, though they hold no official university position as teachers. Teaching ability is probably not considered by hospital boards when they are making appointments to their staffs; university senates and councils, however, must regard teaching ability as a *sine qua non* in a professor, lecturer or tutor. Sometimes their judgements are correct and all is well; when their judgements are faulty, they seem content, more is the pity, to shoulder their unwanted burden for all time. Professor Ryle emphasizes the opportunities of a teacher in general medicine:

> He rubs shoulders continually with students, practitioners, clinical specialists and scientists and, last but not least, with patients of all degrees . . . his functions are essentially judicial and he is continually in the position of having to balance the opinions and evidence of others. The science and art of medicine are more constantly complementary in his particular work than in the work of the general practitioner, ... Philosophy, psychology and scientific thought make common cause in his daily affairs, although he separately professes none of them.

All men tend to allow themselves to get into a rut. Medical teachers are no exception; they are apt to magnify one aspect of their work at the expense of another. Some Australian university teachers in medicine are whole-time officers; others are engaged in private practice when they are not teaching. The latter are not so tempted as the former to cut themselves off from their brethren in active practice; their temptation is rather to neglect the purely academic, the experimental and laboratory side of medicine. The whole-time officers of a medical school are much more prone to forsake the assembling of themselves together with their fellows; and some of them do. By so doing they restrict their own outlook, and their insularity is reflected in the department and the school that they should adorn. The medical school is, or should be, part of the medical life of a community, and it should be represented at all important scientific discussions. The meetings of the Branches of the British Medical Association offer an arena where medical teachers may break a lance—they surely have something to teach to practitioners, and they may even learn something themselves from those whose work is purely clinical.

Current Comment.

HEART DISEASE.

DURING the past few years considerable attention has been paid to the ætiological factors in heart disease as determined in Great Britain and Ireland. One of the chief workers in this field was the late Dr. Carey Coombs, and his findings, in the main, correspond with those recently published in America by Howard B. Sprague and Paul D. White.[1] Broadly speaking, the nineteenth century might be said to have been an era in which close attention was devoted to the study of naked eye pathology and of structural changes in cardio-vascular disease. The present age concerns itself more with the causation of such maladies. On such a basis the proper classification of heart disease and the first attempts at its prevention must ultimately rest. Endeavours of this kind in North America proceeded directly from the work of Cabot, the famous Boston clinician. Cabot distinguished four main types of cardiac disease: those due to rheumatism, syphilis, hypertension and arteriosclerosis. Today in the United States of America these diseases are responsible for nine-tenths of the total number of cases of heart disease. To the remaining one-tenth we may assign as primary causes congenital lesions, thyreoid disease, acute and subacute bacterial infections, diphtheritic and toxic heart affections, pulmonary hypertension, trauma, systemic disease and neoplasms. In these, many of the underlying causes admit of effective treatment. None of them is a source of worry to public health authorities, with the sole exception of those occurring in goitrous districts. The group comprising the rheumatic, syphilitic, and hypertensive patients may in due course become amenable to suitable therapy, and even the arteriosclerotic group may be so reduced in numbers by some treatment, as yet undetermined, that the disease will be a menace only to the aged. It has to be admitted that the pathological signs of rheumatism—Aschoff bodies, round and giant cell infiltration in perivascular spaces *et cetera*—are to be observed only in man and cannot be reproduced in animals; and one is forced to admit that the exact part played by the *Streptococcus hæmolyticus* in the ætiology of rheumatic heart disease is still unsettled and highly debatable. From the national point of view, rheumatic fever in the United States of America is a disease of the lower middle classes, having a seasonable variability, commonest in temperate climates, and affecting particularly school children in impoverished localities. Usually the disease makes its first onslaughts upon children between the ages of five and ten years, and whatever the causative virus, it may be reactivated by apparently irrelevant events, such as emotional outbursts, protein shock therapy, or a surgical operation.

It is possible to tabulate a list of ideal recommendations calculated to reduce the incidence of

[1] *The Journal of the American Medical Association*, November 2, 1935.

rheumatic fever. First, children habituated to life in the tropics and free from respiratory disease should not migrate to temperate zones during cold weather, during which they are likely to develop severe rheumatism. A higher standard of living, likely to assist in the abolition of overcrowding, malnutrition and the direct transmission of the disease, is also highly desirable. A reactivation of the disease can perhaps be prevented by the avoidance of all chances of respiratory infection and of children suffering from chronically infected throats. Sprague and White have shown that the incidence of syphilitic heart disease is highest amongst the negro population of the United States of America, but the successful treatment by modern therapy of primary syphilitic lesions has undoubtedly had a good effect in lessening the total of subsequent cardio-vascular lesions; it is not improbable that the cardiac lesions of syphilis will disappear in course of time. High blood pressure is an important factor in the production of cardiac failure accompanied by fatigue, dilatation and hypertrophy of the left ventricle, and in New England is known to be present in 30% of all cases of organic heart disease. This hypertension is invariably the predecessor of arteriosclerosis. Its cause is yet unknown, though joy and sorrow, virtue and vice, and most of the conditions of living which obtain in a highly complex civilization are held up to blame. It appears likely that hypertension has a direct relationship to the rush of modern life, but how this stress is to be eliminated is a problem not yet solved to the extent of benefiting large groups of the population. Disease of the coronary arteries is due to arteriosclerosis in the vast majority of cases. Its primary cause is not determined, though it has been under discussion for a century and more. Some think that those parts of the artery suffer most which are subjected to the greatest wear and tear, though these sites are not specified. Without doubt a certain fragility of the coronary vessels may be inherited, and the sclerotic process often appears early in diabetics and the obese. An allied problem is that of coronary thrombosis. It is known to occur in arteries of which the walls are damaged and the lumina narrowed, but these antecedents are sometimes lacking. With our present knowledge the treatment of coronary disease is confined to the establishment of a life in which exercise and rest are nicely mixed, and the avoidance of poisons such as tobacco, alcohol and lead.

Alfred E. Cohn shows graphically[1] that the death rate from cardiac and respiratory disease is rising. This rise especially affects the age groups above forty years, and there is a very high net increase after the age of sixty. This mounting of the death rate has become more and more evident since the year 1900. Since 1920 the death rate from arterial diseases has steadily climbed. Curiously enough, the American figures show that deaths from cerebral hæmorrhage and softening have fallen in each decade since 1920 and that there is no significant rise until after the age of seventy.

George Fahr[1] considers that 55% of the appalling death rate following essential hypertension is due to heart failure and that a very high percentage of patients with *angina pectoris* suffer also from concomitant arteriosclerosis of the coronary vessels. So frequent is the association of hypertension and coronary disease that, according to Fahr, the term "hypertensive heart disease" should connote coronary involvement.

Since figures show that the incidence of heart disease is increasing, the rehabilitation in industry of affected persons becomes nationally important. According to W. D. Stroud,[1] individuals with cardio-vascular disease form the largest group of persons suffering from physical handicaps. It may be only partially true to say that physical effort plays as important a rôle in producing cardio-vascular disease as many imagine; but, if so, the training of the patient is as urgent a duty of the physician as the institution of any other form of therapy. By means of proper functional classification by medical practitioners, whether privately or in suitable clinics, many more persons than previously may find suitable employment in the industrial world. Before this desirable state of affairs is attained, however, medical practitioners must be seized with their responsibilities and be prepared to work in harmony with the social services concerned.

Turning to the recording of cases of cardiac and vascular disease, O. F. Hedley[1] states that the now accepted system of collecting statistics bears no fit relationship to the concepts of modern medicine and is not in harmony with the terms of the International List of Causes of Death, which was designed to obtain uniformity in vital statistics throughout the world. Furthermore, no change of methods is possible before the decennial revision of the list in 1940. It is urgently necessary that physicians should be asked to classify cases of heart disease from the ætiological standpoint, and to supply adequate descriptions of organic changes and physiological dysfunction. Deaths from syphilitic heart disease should find their proper place of classification under the heading of syphilis, rheumatic heart disease under that of rheumatic fever *et cetera*. So bad is the present condition of the figures that it gives no true picture of the incidence of heart diseases. In one American hospital only 62% of deaths from heart disease were officially tabulated as due to that cause, and many diagnoses were made on insufficient evidence. It may be said, on consideration of this American symposium on heart disease outlined above, that many Australian States are as yet unprovided with sufficient and suitable facilities, in the form of clinics and bureaux, for an investigation into the incidence of cardiac disorders. Finally, a "rheumatism survey" in certain low-lying riverine areas and overcrowded city districts is, as we have previously urged, a necessity of today, not of the future.

[1] *The Journal of the American Medical Association*, November 2, 1935.

[1] *The Journal of the American Medical Association*, November 2, 1935.

Abstracts from Current Medical Literature.

THERAPEUTICS.

Pharmacological Aspect of Digitalis Therapy.

A. FRAENKEL (*The Lancet*, November 16, 1935) has attempted by experimental methods to evolve a rational digitalis therapy for clinical use. He points out first that the intravenous route of administration is the only one which allows of a scientifically controlled dose reaching the heart. From a discussion of the various glucosides of digitalis he concludes that the amorphous compound obtained from *Strophanthus Kombé* is the most suitable for therapy, there being less cumulative effect and a preponderant cardiac influence; it is also less toxic and more soluble than the crystalline product from *Strophanthus gratus*. A very important advance was made in digitalis therapy when it was shown that, on the one hand, therapeutic doses of the glucoside increased the isolated heart's capacity for work and its period of survival, and inhibited the processes of fatigue; and on the other, that toxic doses, themselves leading to morphological changes in the muscle, decreased the capacity for work and accelerated the processes of fatigue. In spite of this, however, the period of survival of such injured hearts was prolonged to the same extent as was that of hearts treated with therapeutic doses. Subsequent experimental observations have shown that the digitaloids, and especially the strophanthins, are fixed to the heart for so short a period that a therapeutic dose is eliminated within twenty-four hours, and this fact has provided the basis for the author's method of treatment of heart failure. The physiologist has proved that heart failure, as occurring after exertion in the milder degrees of functional impairment and during repose in the more severe, is associated with a diminished stroke volume and a decreased output per minute, to which are linked, as secondary effects, changes in the volume of circulating blood. The pharmacologist has demonstrated that the main effect of digitalis in heart failure is an increase in the stroke volume and a change in the distribution of blood resulting from the increased circulation rate; furthermore, such an effect can be obtained with no other drug. Unfortunately the clinician has no methods whereby he can easily estimate the stroke volume and minute output; the systolic, diastolic and pulse pressures, radiography and the measurement of the venous pressure are available for the assessment of the degree of heart failure and of its therapy. The author then suggests two further methods of value in this connexion. First, the daily measurement of body weight excludes the possibility of neglecting the extrarenal loss of water (obviously overlooked if the total urine output be alone measured) and indicates by direct means the day on which the removal of œdema fluid is completed, and so the time when the minute volume has in all probability reached its optimum. The second method suggested is the feeling of the patient, the so-called "subjective indicator". The cause of the improved well-being of the patient is not yet known; all that seems to be certain is that it precedes the demonstrable increase in the minute volume. The principles of strophanthin therapy are three: First, there is no degree and no phase of cardiac insufficiency from the beginning of the disease to the stage of extreme abnormality in the distribution of blood along with its accompaniments, which does not respond to the intravenous administration of strophanthin. Only the compensated heart on the one hand or the dying heart on the other not yet or no longer responds to this therapy. Secondly, in strophanthin therapy it is necessary to adhere to exact dosage and to take careful records of the effects of each and every dose, even if treatment is continued for a long period. Such detail is usually neglected in therapeutic measures; such a procedure, being based on scientific method, raises strophanthin therapy to the level of a controlled experiment. Thirdly, the prognosis of cardiac insufficiency has entirely changed since the possibility has arisen through the use of strophanthin not only of enlarging the field in which treatment with digitalis is indicated, but also of making success in the treatment of certain cases more assured. The features of this condition have been further allayed since we have had at our disposal a suitable mercurial diuretic which can be given intravenously, namely, "Salyrgan". The appropriate combination of both remedies, not simultaneously or even on the same day, makes possible the removal of œdema of the severest degree as well as that of very long standing. It is pointed out in conclusion that this method is not to be regarded as a revolt from the oral method, which must retain its position in the treatment of those cases where the degree of failure is not too severe or not of too long standing.

Diuretic Action of Potassium Salts.

NORMAN M. KEITH AND MELVIN W. BINGER (*The Journal of the American Medical Association*, November 16, 1935) are able to give some results of experiments performed to determine the relative diuretic action of various potassium salts on normal individuals and on patients with œdema of varying ætiology. The first group were observed over a period of ten to fourteen days; the daily diet was weighed, it was low in water and mineral content, particularly as to sodium and chloride; it was calculated to be sufficient in calories and protein to keep the individual in nitrogen balance; the total intake of fluid was limited to 800 cubic centimetres. A specific salt was given for five days, the chloride, bicarbonate, nitrate, acetate and citrate of potassium being used. The salts were given in a single daily dose of 7·5 to 14·0 grammes (0·13 to 0·2 gramme per kilogram of body weight) in a 25% solution. The nitrate caused a relatively greater diuresis than any of the other salts, the chloride being next in efficiency; then came the bicarbonate, acetate and citrate. The potassium radicle was readily excreted. A sudden decrease in the excretion of water and minerals after discontinuing administration of the salt was a striking finding in each experiment. The estimation of the serum potassium before and during the experiments showed a varying rise, but no toxic symptoms were observed. Two short experiments were next performed to determine the effect of a single large dose of a potassium salt; 12·5 grammes of potassium acetate or nitrate were ingested and specimens of urine and venous blood were collected at various intervals during the succeeding seven hours and tested. The results indicated that the salts were rapidly ingested and excreted, and the blood and urine changes were very similar to those taking place during the longer experiment. To sixty patients with œdema due to chronic nephritis, myocardial degeneration with decompensation, cirrhosis of the liver with ascites, and polyserositis with tuberculosis of the peritoneum, potassium salts have been administered with an increased urinary output in 80% of cases. The average dosage was 12·5 grammes of potassium nitrate per day, or its atomic equivalent in other salts; this corresponds to about 5·0 grammes of potassium, and this was the maximal dose for any patient with œdema. The absence of diuresis after administration has continued for a few days is a danger signal. Some patients were able to take 10% solutions of the salt; others took it as salt on food; others complained of epigastric discomfort or even nausea. Potassium nitrate, 0·5 gramme, in the form of an enteric coated pill was the most satisfactory method of administration. The combined use of potassium salts with other diuretics, such as the organic compounds of mercury and the caffeine-containing aminophylline, sometimes has produced excellent results.

Rheumatoid Arthritis.

R. L. CECIL, C. FREISS, E. E. NICHOLLS AND W. K. THOMAS (*The Journal of the American Medical Association*, October 12, 1935) report the results of treatment of thirteen patients with rheumatoid arthritis by means of malarial therapy. All the patients had been previously treated in other ways; all except one had chronic disease. Inoculation was carried out by means of anopheline

mosquitoes infected with *Plasmodium vivax*; after from three to fifteen paroxysms the malaria was terminated by quinine therapy. In all cases the immediate result was excellent, but relapse occurred after four to six weeks' time, except in the one acute case, in which the duration was only four months at the time of administration of malarial therapy.

NEUROLOGY AND PSYCHIATRY.

The Significance of Paraplegias.

GEORGE B. HASSIN (*The Journal of Nervous and Mental Disease*, August, 1935) points out that paraplegia is not a disease entity, but is a sign of some disease of the spinal cord, peripheral nerves or brain, and he illustrates this by cases of epidural abscess (peripachymeningitis), Pott's disease, lymphoblastoma (Hodgkin's type), lymphoblastoma (aleuchemicum), epidural carcinoma, adhesive arachnoiditis and extravertebral hæmatoma. The ætiological factors are of the greatest diversity. Some come within the province of the surgeon, when, for instance, an exploratory laminectomy would be amply justified. Several cases are quoted by this author in which the symptom has resulted from some surgically removable cause, and the results obtained by timely operation have been brilliant.

Syphilis of the Spinal Cord.

N. W. WINKELMAN (*American Journal of Syphilis and Neurology*, July, 1935) contributes a lengthy article on syphilitic involvement of the spinal cord, setting forth the clinical picture of such lesions, the diagnosis, prognosis and pathology. The spinal cord is not usually attacked alone, and although tabes and meningomyelitis are considered to be separate entities, there is usually some involvement of the parenchymatous parts of the brain or cord. Again, several different syphilitic conditions of the cord are described separately, whereas it is usual to find inflammation of the spinal and cerebral meninges in patients who present merely the clinical signs of posterior column involvement. Parenchymatous syphilis of the cord includes such entities formerly described as syphilitic amyotrophy, amyotrophic meningomyelitis, progressive spinal muscular atrophy of syphilitic origin, and chronic syphilitic poliomyelitis. Histologically the condition is characterized by a progressive inflammatory degenerative process involving the motor elements of the anterior horns. The onset is slow and insidious and usually begins in patients past middle life. Blood and spinal fluid both yield positive Wassermann reactions in the majority of cases. Differential diagnosis is from syringomyelia and hypertrophic cervical pachymeningitis. The prognosis is good if the condition is recognized early enough and antispecific treatment is vigorously applied. The interstitial forms of spinal syphilis are the counterparts of the interstitial types met with in the brain. The term meningomyelitis is applied to inflammation resulting from primary syphilitic inflammation in the subarachnoid space with secondary extension into the cord itself. The author proposes the term *myelomalacia syphilitica* to designate cases in which softening of the cord substance has occurred as the result of syphilitic vascular disease. Unlike most neurosyphilitic conditions, the symptoms of spinal syphilis follow within a comparatively short time after the initial infection. The pathological process is so variable that it is difficult to trace a typical symptom complex. Various root pains and atrophies signify the beginning of the disease. Frequently the process does not remain localized in the cord. The course is chronic and progressive with the development of an incomplete transverse lesion of the cord. Death frequently occurs as the result of an ascending infection from the bladder. Prognosis depends entirely upon the early recognition of the disease, although complete recovery takes place only in a small number of cases.

Lipoma and Osteolipoma of the Brain.

SAMUEL J. SPERLING AND BERNARD J. ALPERS (*The Journal of Nervous and Mental Disease*, January, 1936) report the case of an aged woman who for many years suffered from blindness and who finally developed mental symptoms which were due to a lipoma of the third ventricle. The authors state that cerebral lipomata occur in patients of all ages, being about twice as frequent in the early decades of life as they are in the later. Cerebral lipomata give no characteristic symptomatology, the symptoms, when present, being due to pressure upon surrounding structures. The authors further state, from a review of the literature, that cerebral lipomata are generally found situated about the base of the brain around the optic chiasma, the *tuber cinereum*, mammillary bodies and posterior perforated spaces. Some have been reported on the *corpus callosum* and a few on the brain stem and cerebral cortex. Cerebral lipomata are frequently associated with mental defects. While admitting certain theoretical considerations involving the ætiology of these tumours, the authors advance the idea that cerebral lipomata may arise from mesenchymal rests in the pia.

Forced Perivascular Drainage.

GEORGE M. RETAN (*The Journal of the American Medical Association*, October 26, 1935) discusses the use of forced perivascular drainage in the treatment of certain diseases of the nervous system, such as acute poliomyelitis, chorea, syphilitic meningitis and *tabes dorsalis*. He admits his work to be still in the experimental stage, but believes it is of definite value. He uses injections of 0·375% saline solution in quantities which vary with the body weight of the patient. Cerebellar herniation, which is the chief danger in this treatment, can be both prevented and controlled. The treatment is contraindicated in cases of cerebellar tumour or abscess; in inflammation of the lung or bronchi; in acute inflammatory disease of the heart, myocardial weakness or acute nephritis. The author claims that the curative effect of his treatment is due to certain fluid movements through the tissues of the central nervous system, and possibly also to the production of a certain amount of hydration of the nervous tissues. He quotes several encouraging experiments on monkeys, and gives directions regarding technique in using the method with human beings. Secondary infection within the subarachnoid space will not occur in a properly aseptic technique.

Tay-Sachs's Disease.

R. F. STEEN (*The Irish Journal of Medical Science*, September, 1935) reports a case of amaurotic family idiocy and reviews the previous cases of this rare disease reported in the literature. The disease, which is marked by specific changes in the ocular fundi associated with progressive mental deterioration, has several strange features. While the ætiology is obscure, the disease, which has a marked familial incidence, is almost exclusively confined to the Jewish race, and chiefly to its Polish branch. The patient reported in this review had no Jewish ancestry. The author deals exhaustively with the symptomatology and pathology of the condition; but, while admitting that no known form of treatment will arrest the fatal course of this disease, he hints at its being possibly a metabolic disease, and suggests treatment of early cases on a fat-free diet.

Psychiatric Aspects of Myxœdema.

ANDREW J. E. AKELAITIS (*The Journal of Nervous and Mental Disease*, January, 1936) publishes full reports of four cases of myxœdema which illustrate various psychiatric aspects of adult thyreoid deficiency. He claims that there is a specific mental state, characterized by psychomotor retardation and fatigability, in every case of myxœdema not otherwise complicated by a psychosis. These specific symptoms depend both on the degree of thyreoid deficiency and the mental make-up of the patient. Marked glandular deficiency may lead to stuporose states. There is no specific psychosis associated with myxœdema. One frequently finds evidence of vivid auditory hallucinations, together with unsystematized delusions and periods of excitability. Myxœdema may precipitate a psychosis in a person with latent psychotic tendencies. In such a case the psychosis will follow the predetermined lines. Under thyreoid treatment improvement occurs unless the psychosis was merely precipitated by glandular deficiency.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Victorian Branch of the British Medical Association was held at the Children's Hospital, Melbourne, on October 16, 1935. The meeting took the form of a series of clinical demonstrations arranged by the members of the Melbourne Pædiatric Society. Part of this report appeared in the issue of February 22, 1936.

Congenital Morbus Cordis.

DR. C. H. FITTS showed a girl, aged thirteen years, in whom he thought the defects were those known as Fallot's tetralogy, namely, pulmonary stenosis with defect of the interventricular septum and dextroposition of the aorta to such an extent that it overrode the septal defect, combined with hypertrophy of the right ventricle. Dr. Fitts mentioned that this was the only common type of congenital heart disease associated with extreme cyanosis that allowed the patient to reach adult life. The skiagrams of this patient were shown, and there could be seen the *cœur en sabot* appearance of the heart associated with enlargement of the right ventricle and absence of the shadow of the pulmonary artery. Dr. Fitts said that the electrocardiogram curves shown were unlikely to be produced by any condition but a congenital lesion.

Rheumatic Heart Disease.

Dr. Fitts also showed two girls, each aged twelve years, the subjects of rheumatic heart disease. He said that he showed these patients for purposes of comparison and to demonstrate some of the fallacies inherent in methods of assessing the important question of the cessation of activity of the rheumatic infection. The first girl had been treated with salicylates and had responded in the accepted manner. She remained in bed for six weeks and had then spent about two months in a convalescent home. She had come under his observation at the outpatient department of the hospital at that stage. She was pale, but not noticeably breathless; the pulse rate was 100 per minute; the apex beat was five centimetres (two inches) nearer the mid-line than shown by the previous records; the signs of mitral stenosis were observed; there were 14,000 leucocytes per cubic millimetre of blood; the blood sedimentation rate was 25 millimetres in the first hour. Dr. Fitts said that in his opinion the disease was still in an active stage and that the usual clinical methods of deciding when activity was at an end might be misleading. The other girl was an example of fully developed rheumatic heart disease with mitral stenosis.

The skiagrams of both patients were shown and the outline of the left auricle in relation to the œsophagus behind was demonstrated. The œsophagus had been filled with barium, in each case, to bring out this relationship.

Dr. Fitts suggested a number of points worthy of consideration in the problem of continued activity in rheumatic heart disease. In the first place, he said that the child should be afebrile, without salicylates, for at least a week before being allowed out of bed. He believed that a false sense of security might be instilled if this practice was not adhered to, and that, if temperature was to be taken as a guide, activity might be masked by continued salicylate therapy. Secondly, the child should be gaining weight (but not the spurious gain associated with œdema) before he was allowed up, and should continue to gain weight while under observation. It was a commonplace that the child who failed to make good progress was the thin one who did not gain weight readily. Thirdly, repeated estimation of the numbers of leucocytes and the blood sedimentation rate should be carried out and the child should not be allowed up until both were within normal limits. Fourthly, gross anæmia should be treated before the child was allowed up. Fifthly, an electrocardiogram often showed delayed conduction and, if so, it was wise to keep the child in bed until this disappeared. The position of the apex beat at various times during the illness was an uncertain means of estimating activity; it was quite possible to have active carditis without displacement of the apex beat. Radiological studies tended to disprove the belief that the heart reacted like a concertina in rheumatic carditis, enlarging with activity and shrinking with the cessation of activity. The pulse rate might also be a very fallacious guide. Persistence of the pulse rate over 100 beats per minute was often the rule long after the active stage was over, judged by every other means. Finally, the child should be allowed up for only one hour daily for the first week, and each subsequent week the child should be weighed, have a leucocyte count and a blood sedimentation rate estimation done, and, whenever there was any indication of activity, the child should be put back to bed; but in the absence of evidence of activity the period out of bed should be lengthened in the second week.

Bronchiectasis.

Dr. Fitts also showed a series of skiagrams illustrating different types of bronchiectasis. In each case the lipiodol appearances were shown both in the antero-posterior and true lateral views. The injections had been done by the crico-thyreoid route. The apparatus used was demonstrated. The types shown included: the congenital atelectatic type; the acquired atelectatic type, not due to foreign body; the acquired atelectatic type, following inhalation of a metallic foreign body; the type associated with sinus infection; and the type following various pulmonary infections, such as bronchopneumonia and empyema.

Hydrocephalus.

DR. IAN WOOD showed two patients with hydrocephalus, illustrating the uncertainty of prognosis. The first was a baby, eleven months old, who became affected with hydrocephalus, which gradually increased, after a slight febrile illness at the age of three months. Dr. Wood remarked that the commonest cause of acquired hydrocephalus was meningococcal meningitis. The second patient was a girl, aged eleven years, whose head was noticed to be swollen a few days after birth. It increased rapidly in size till she was two years old; but since then it had remained stationary. She was unable to stand without support and her mental condition was considerably impaired. Dr. Wood commented that this was an example of the congenital variety of hydrocephalus in which the condition was due either to a block in the ventricular system or to an absorptive system which was relatively inefficient.

Pathological Specimens.

DR. REGINALD WEBSTER demonstrated pathological specimens the principal group of which was chosen to correspond with the clinical conditions of patients shown by Dr. Ian J. Wood and Dr. E. E. Price. In this group there were specimens of pyloric and duodenal stenosis, tracheo-œsophageal fistulæ and atresiæ of varying lengths of intestine. Contrasting with specimens illustrative of rudimentary colon was one of megacolon. Other specimens furnished examples of obstructive and communicating hydrocephalus respectively, and a number were included to show various types of obstruction and dilatation of the ureters.

There were also specimens illustrating pulmonary tuberculosis, bronchiectasis and metastatic pulmonary neoplasms.

Instruments Used in Intracranial Surgery.

DR. R. M. DOWNES demonstrated the particular uses of all the special instruments used in intracranial surgery and discussed points of interest in this special branch of surgery. He said that morphine and hyoscine were the drugs of choice for pre-operative medication, the dose varying with the age of the patient. "Avertin" was always employed as the basal anæsthetic; it was administered half an hour before the operation; the dose varied with the body weight of the patient. At times it was found necessary to use a little chloroform or ether during the operation. The anæsthetist sat out of the way near the

table and recorded the blood pressure and pulse and respiration rates at regular intervals on a special chart.

Dr. Downes demonstrated the specially constructed head-rest, which had side clamps to fit the operation table and was capable of being altered in position according to the site of operation. He showed how the lead terminal of the endotherm was always arranged on the patient before the commencement of the operation, and stated that from the outset saline solution was run under the skin of the thighs. Grey sheets were shown, one round the head, and a larger one covering everything and tied in position with tapes. It was his practice to inject the scalp first with 0·5% "Novocain" solution and then to paint it with "Luceol".

Several types of drilling machine were shown. De Martel's machine was demonstrated in action on a skull. Dr. Downes explained how the safety lock operated automatically as soon as the dura was reached. The cutting edge drill was used to demonstrate the ease with which even curved flaps could be cut and the whole flap turned down in less than ten minutes. By contrast, the slow and tedious action of the Gigli saw was shown. Dr. Downes also worked another type of mechanical saw—the Lambert-Rodgers skull plough. He explained how the endotherm was used frequently to open the dura and to coagulate vessels, and showed how to use the special bone wax to plug bleeding points in the skull and the small pieces of half-inch-square wool with black thread attached with which he swabbed the brain. He mentioned that the *galea aponeurotica* was sutured with black waxed silk and the scalp with horsehair and silkworm gut sutures. He showed the type of starch bandages applied to splint the head loosely when the posterior fossa had been opened, and referred to the fact that transfusion might be given, if necessary, by the malleolar vein while the operation was in progress.

Acute Streptococcal Toxæmia with Purpura.

DR. A. P. DERHAM showed two patients suffering from hæmorrhagic symptoms of a type that at first suggested purpura, but on investigation proved to be not purpuric.

The first patient was a boy, aged seven years, who was admitted to the Children's Hospital on April 25, 1935, with abdominal pain and weakness. The past history and the family history were unimportant. Fifteen days before admission the boy had been sent home from school on account of illness; he was very weak, and black blisters appeared on his hands and feet; he vomited several times and complained of abdominal pain; the urine contained blood. Five days before admission the abdomen, face and arms, but not the legs, became swollen; the abdominal pain continued. On admission the boy had looked very ill, with pale, puffy face and dirty tongue; the abdomen was full and tender, especially over the area of the right kidney and in the suprapubic region, but there was no rigidity. He was treated for acute nephritis and was given a mixture containing potassium citrate, in a dose of 2·0 grammes (thirty grains) every four hours, and a diet with restricted fluids and protein. The urine contained much albumin, many red blood cells, and hyaline and granular casts. On April 28 a purpuric rash appeared on the body and he passed bright blood *per rectum*. On April 30 the bleeding continued and the urinary condition remained the same. On May 2 pus was discharged spontaneously from the left ear and a further crop of purpuric spots appeared on the body. During this period investigations of the state of the blood resulted in the following findings: the red cells numbered 2,500,000 and white cells 29,000 per cubic millimetre; the hæmoglobin value was 50%; the bleeding time two minutes and coagulation time five minutes; the platelets were normal in number; the polymorphonuclear cells numbered 70%, the large lymphocytes, large mononuclear cells and transitional cells each 5%, the small lymphocytes 10%, and eosinophile cells 4%.

The patient's condition gradually became worse. On May 15 he passed only four ounces of urine, and the œdema had increased; his temperature was of the high swinging type, reaching 39·4° C. (103° F.) in the afternoon. On two occasions unsuccessful attempts were made to culture organisms from the blood. During the further course of the illness he was given low-grade diphtheria antiserum by mouth, in a dose of 8·0 cubic centimetres (two drachms) every four hours. Bleeding from the bowel continued until May 24. On May 23 he was given a transfusion of 240 cubic centimetres (eight ounces) of blood from his father, and from that time his condition improved and the temperature approached the normal range. On June 1, though œdema was still present, the rash had disappeared; the red cells numbered 2,780,000 and white cells 13,400 per cubic millimetre, and the hæmoglobin value was 40%. By June 17 the red cell count had risen to 4,000,000 per cubic millimetre, the white cell count was 8,000 per cubic millimetre, and the hæmoglobin value was 78%. At the meeting it was noted that the general condition had continued to improve and that the boy seemed reasonably well.

Dr. Derham stated that his diagnosis was one of symptomatic purpura dependent on acute streptococcal toxæmia, probably from a middle ear infection and associated with acute hæmorrhagic nephritis. Although the symptoms had suggested true purpura and also septicæmia, neither of these conditions was proved and the rapid improvement after one transfusion suggested that the diagnosis of toxæmia was correct.

Banti's Syndrome with Hæmorrhages.

Dr. Derham's second patient was a boy, aged eleven years and four months, who had been admitted to the hospital on September 4, 1935, suffering from weakness, pallor, loss of weight, hæmatemesis and melena. He had previously been an in-patient, from August 31 to September 11, 1933, with a condition of secondary anæmia the cause of which had been undiagnosed. At that time the red blood cells numbered 2,370,000 and the white cells 7,100 per cubic millimetre, and the hæmoglobin value was estimated at 36%. The spleen and liver were not palpable. The temperature was slightly elevated; but on treatment with iron and liver he improved rapidly and was discharged to the out-patient department for further investigation and observation. Unfortunately he did not attend until the present illness commenced; it was said that he had been quite well in the meantime, until six weeks before the second admission, when his parents had noticed that he was pale and listless, with poor appetite and loss of weight. One week before admission he passed dark-coloured motions; vomiting of blood-streaked material occurred on the day before admission. The family history was unimportant.

When admitted on September 4, 1935, the boy looked very pale and ill. The pulse was of poor volume; but he was not distressed. A systolic bruit was audible all over the precordium; the liver was enlarged three fingers' breadth below the costal margin; the spleen was not palpable, and there were no abnormally enlarged lymphatic glands. When the blood was investigated it was found that the red cell count was 2,500,000 and the white cell count 13,000 per cubic millimetre; there were 69% of polymorphonuclear cells, 28% of lymphocytes, 3% of mononuclear cells, no eosinophile cells being noted. The bleeding time was two minutes, the coagulation time was five and a half minutes, and the platelets numbered 480,000 per cubic millimetre.

On the day of admission he was given a transfusion of 300 cubic centimetres (ten ounces) of citrated blood from his father. On September 5 the spleen was palpable; but the urine and stools did not contain any macroscopic blood. He was given "Colliron", in a dose of 4·0 cubic centimetres (one drachm) three times a day, and a full diet with an ample supply of the chief vitamins. There was no reaction to the Van den Bergh, Fouchet and Wassermann tests. On September 9 examination of the blood revealed 2,000,000 red cells and 8,000 white cells per cubic millimetre; the hæmoglobin value was 30%. On September 16 the red cell fragility test failed to reveal any abnormal fragility. About this time the patient complained of abdominal pain, chiefly in the left flank. On

September 18 the red blood cells numbered 2,690,000 and the white cells 7,200 per cubic millimetre, and the hæmoglobin value was 35%. On September 26 his general condition appeared to be improved; but the blood findings were about the same, the spleen had enlarged, and there were signs suggestive of free fluid in the abdomen. On October 2 he was given a transfusion of 240 cubic centimetres (eight ounces) of citrated blood from his uncle. On October 3 he vomited and complained of pain in his neck and left shoulder. No cause could be detected for this, but it was thought likely that he had sustained a splenic infarct. On October 4 the temperature, which had been reaching a maximum of 37·2° C. (99° F.), rose to 38·3° C. (101° F.) and the pain in the left shoulder became worse on deep breathing. On October 5 the red cells numbered 3,900,000 and the white cells 13,000 per cubic millimetre, and the hæmoglobin value was 53%. On October 12 the spleen was larger, the abdomen much distended, and there was increased movable dulness in the flanks; but his general condition was improved and the pyrexia had subsided. On October 14 the red cells numbered 3,000,000 and the white cells 5,600 per cubic millimetre, and the hæmoglobin value was 60%.

During six weeks in hospital the abdominal distension increased rapidly and the superficial veins of the upper abdominal wall became very dilated. Dr. Derham considered that the diagnosis was chronic splenic anæmia of the type still classified (Parsons and Barling) as "Banti's syndrome" in the third or cirrhotic stage. He pointed out, in discussing the differential diagnosis, that in the absence of signs of a general infection or of a general purpuric tendency, it was almost certain that the hæmorrhages were due to portal congestion and not to an abnormal capillary permeability; the absence of jaundice, the absence of the Wassermann reaction, and the almost typical blood picture, practically enabled him to rule out the other common causes of splenomegaly associated with hepatomegaly. He considered, therefore, that splenectomy offered the only likely means of relief from symptoms and prolongation of life.[1]

Most of the members present agreed with the diagnosis and with the treatment advocated.

DR. W. SPAULDING LAURIE disagreed with the hypothesis that the cause of Banti's disease was a chronic splenic infection; he considered that this group of diseases was due to a chronic hepatic infection causing portal congestion, in which the spleen shared for mechanical reasons; he disliked the terms "splenic anæmia" and "Banti's disease", because they conveyed no true pathological significance.

DR. ERIC COOPER did not think splenectomy was advisable, owing to the high platelet count and the consequent danger of portal thrombosis.

Behaviour Problems.

DR. JOHN F. WILLIAMS demonstrated methods of investigation and treatment in behaviour problems and illustrated the demonstration by reference to the specific details of two examples of children who had come under observation because they had wandered from home and school.

The various methods of testing intelligence and the use of a playroom for diagnosis and treatment of young children were shown; and Dr. Williams pointed out the desirability of an investigation of the conditions in the home and in the school by a trained social worker, and emphasized how it was possible to modify the behaviour of the child by adjustment of the home atmosphere.

Congenital Syphilis.

DR. JOHN HEATH showed several patients illustrating some of the bone manifestations of congenital syphilis. The first was a female child, aged two months, who had been brought to hospital for failure to gain weight satisfactorily and had been admitted with the provisional diagnosis of dyspepsia. The mother stated that the child had been irritable from birth, and though she took her food quite well, frequently screamed afterwards. On examination it was noted that the baby was undersized and microcephalic and carried the left arm in a position resembling that assumed in Erb's palsy; a macular rash was present around the mouth, chin, shoulders, buttocks and genitalia; the blood reacted strongly to the Wassermann test; skiagrams of the long bones showed periostitis, osteitis and epiphysitis; in the left shoulder joint region subperiosteal bone formation was present, with destructive changes, which were so extensive that the head of the humerus was not visible. Treatment consisted in intramuscular injections of "Acetylarson", in a dose of one cubic centimetre each week, with mercury, by mouth, in the form of *Pulvis Hydrargyri cum Creta*, in a dose of 10·015 grammes (one-quarter of a grain), twice a day. Under the influence of this treatment the child was gaining weight and the general condition had improved considerably.

Dr. Heath also showed patients with frontal bossing, Hutchinson's teeth and sabre shins.

Gonococcal Vaginitis.

Dr. Heath also showed a series of twelve patients who had been treated for gonococcal vaginitis with "Theelin" (ovarian follicular hormone) to demonstrate the fact that this mode of therapy was a useful adjunct in the management of this troublesome complaint. These patients proved to be resistant to the ordinary treatment by douching and swabbing; but in ten out of the twelve good results were achieved from treatment with "Theelin". Injections were given intramuscularly once a week, the dose being one cubic centimetre, containing one thousand rat units. The average number of injections given was five, and in the ten cases mentioned signs and symptoms had completely disappeared and gonococci could not be found in vaginal smears. Dr. Heath suggested that "Theelin" was a very useful accessory in the treatment of these patients and that, by its use, the period of stay in hospital was reduced considerably, thereby effecting a saving in the cost of treatment. The principle of this treatment was that the vaginal mucous membrane was transformed from the delicate infantile type into the adult type of epithelium.

Electrocardiography.

DR. H. LAWRENCE STOKES showed the mode of action of a portable electrocardiograph with a Cosser cathode ray.

Cinematography.

MR. J. B. COLQUHOUN showed some motion pictures concerning the treatment of tuberculous disease of the spine and the use of the hydrotherapeutic pool at Los Angeles, United States of America.

Encephalitis Periaxialis Diffusa.

DR. J. W. GRIEVE showed a female patient, aged fourteen years, who had been admitted to hospital with a history of blurred vision, noticed at school for some months, weakness in the legs for two months, and lethargy, irritability and altered speech for two weeks. Examination revealed diminution in visual acuity, which became progressively worse while she was under observation; it was not possible to test this accurately, on account of the patient's lethargy and inability to concentrate. Though the eye grounds were of normal appearance at first, optic atrophy of the primary type supervened after several weeks. Diplopia and nystagmus were present, and on occasions slight ptosis of the left eye was suspected. It was not found possible to estimate the fields of vision satisfactorily.

There was a history of spastic weakness of the lower limbs, and at the time of admission there were evidences of bilateral pyramidal involvement, though spasticity was not present. The deep reflexes were exaggerated; ankle and patellar clonus were present; the plantar reflexes

[1] Since the meeting the patient has been seen in consultation by Dr. W. G. D. Upjohn, who decided to perform splenectomy. This was done successfully on October 23 and the patient made a good recovery and was progressing favourably on November 14, 1935.

were equivocal; the superficial abdominal reflexes were unequal, the left tiring more readily than the right. Subsequently, as the cerebellar signs progressed, these pyramidal manifestations became less definite. At the time of admission, incoordination, ataxia, scanning speech, hypotonia and nystagmus were present; these symptoms steadily progressed and dominated the clinical picture. Difficulty was experienced in testing sensation; but no gross abnormality was demonstrable in the postural sensibility, appreciation of passive movement or tactile discrimination. The cerebro-spinal fluid was clear; the pressure was not increased; there were 53 mononuclear cells to the cubic millimetre; globulin was increased in quantity, and the protein content was 45 milligrammes per 100 cubic centimetres; the chlorides amounted to 753 milligrammes per 100 cubic centimetres; there was no response to the Wassermann test of the cerebro-spinal fluid. At a later stage the application of Lange's colloidal gold test resulted in a mild luetic type of curve. The blood did not react to the Wassermann test.

Dr. Grieve remarked on the onset with visual disturbance and the comparatively rapid progress of the disease through what appeared to be a spastic stage to the cerebellar phase. He considered that the differential diagnosis lay between disseminated sclerosis, Schilder's disease and gliosis of the brain stem; he was inclined to view the condition as a diffuse sclerosis of the Schilder's type, or perhaps a disseminated sclerosis.

Paralysis of the Diaphragm.

Dr. Grieve also showed a boy, aged six years, who had been transferred to the Children's Hospital from the Queen's Memorial Infectious Diseases Hospital with post-diphtheritic diaphragmatic paralysis, for treatment in an artificial respirator. Seven weeks earlier he had had severe faucial diphtheria, for which he had been admitted to the Infectious Diseases Hospital on the third day of illness; 80,000 units of diphtheria antiserum were administered intramuscularly and intravenously. He made satisfactory progress until, in the sixth week of the disease, palatal paralysis and slight ptosis appeared. On the forty-second day pharyngeal paralysis became evident, and two days later partial diaphragmatic paralysis developed, with respiratory distress. At that stage the patient was transferred to the Children's Hospital. Examination revealed poor movement of the epigastrium, the thoracic type of respiration, feeble cough, and evidences of some consolidation at the base of the left lung. He was treated in an artificial respirator. Continuous suction was maintained to get rid of oral and pharyngeal secretions; atropine was given freely, and he was fed nasally. He remained in the respirator continuously for eight days; then, until the thirteenth day, he was allowed out for periods that were gradually increased. At the time of the meeting, some two weeks later, though still confined to bed, he had improved considerably and was using his diaphragm satisfactorily.

Dr. Grieve commented on the late onset of the palatal paralysis and on the great value of the artificial respirator in tiding the child over the few very critical days following the onset of the diaphragmatic weakness.

Hemiplegia Associated with Hypoglycæmia.

Dr. Grieve also showed a girl, aged four years, suffering from *diabetes mellitus*. She had received treatment from May, 1934, and had been in hospital from that time until January, 1935. Stability was obtained by means of a diet consisting of 97 grammes of carbohydrate, 46 grammes of protein, and 61 grammes of fat. She required twelve units of insulin a day; this was given in two equal injections. In January, 1935, she was allowed to go home, and her urine remained sugar-free; but at the end of the first week she became drowsy and was readmitted in a semi-comatose condition. The urine was examined, and when it was found to be free of sugar and ketone bodies she was treated as hypoglycæmic. Later, the blood sugar content was 0·24%. The cerebral condition persisted, and she was convulsed for some hours, and it was seen that hemiplegia of the left side had occurred. This persisted, but improved considerably. At the time of the meeting the general condition, including her mental state, was excellent. The diet consisted of 120 grammes of carbohydrate, 54 grammes of protein, and 65 grammes of fat. Twenty-four units of insulin were given twice a day. The urine was sugar-free.

Dr. Grieve stated that he had seen several hypoglycæmic reactions producing a transient hemiparesis, and he felt that a low concentration of blood sugar was probably the predisposing cause of this patient's disturbance of the central nervous system, complicated by some vascular accident.

Friedreich's Ataxia.

Dr. Grieve also showed a female, aged thirteen years, who, four years earlier, had developed weakness in both legs, which had become progressively worse. A year later, after pneumonia, stiffness and ataxia were first noticed. Scoliosis was noticed for a few months only. When admitted to hospital she was unable to walk and presented evidence of involvement of the pyramidal, spino-cerebellar and posterior column pathways. The positive findings were extensor plantar reflexes, absence of deep reflexes, ataxia, especially in the lower limbs, incoordination, nystagmus, dysarthria and slight impairment of tactile discrimination and vibration sense. Scoliosis and *pes cavus* were present.

Dr. Grieve showed this patient as a typical example of advanced Friedreich's ataxia; he directed attention to the wasting of the small muscles of the hand and the tendency to claw-hand. This condition had been described in this disease, but it appeared to be encountered rarely.

Tuberose Sclerosis.

Dr. Grieve also showed pathological specimens from a patient who had died of tuberose sclerosis. This patient had first been seen by Dr. Grieve at the age of three years, when a diagnosis of *petit mal* with slight mental retardation had been made and a small dose of phenobarbital prescribed. At the age of seven years the patient had again come under Dr. Grieve's notice, when he had been admitted to the Children's Hospital with the history of attacks of severe headache, vomiting, twitching and unconsciousness; these attacks had occurred almost every week during the preceding six months; for seven days prior to admission he had suffered from continuous severe headache with frequent vomiting. His brother was backward mentally and required institutional treatment. A butterfly pattern had been present on the patient's face, consisting of discrete pale pink raised spots. Some scattered nodules were observed on the trunk. In the skiagram of the skull was a rounded area of abnormal opacity to the right of the mid-line, in a central position in the cranium.

The patient died a few days after admission to hospital. At the *post mortem* examination the findings typical of tuberose sclerosis (epiloia syndrome) were observed. There were multiple masses of gliosis in the brain, multiple tumours in the kidneys, *adenoma sebaceum* on the face, and von Recklinghausen's nodules on the trunk. Dr. Grieve showed two specimens of the brain, which had been prepared by Dr. Reginald Webster. One specimen of the cerebral cortex showed the characteristic tubers, which had been coloured by lacquer; in the fresh brain the firm potato-like structure of the affected areas had been obvious on palpation. The other specimen was a horizontal section of the brain and showed masses of gliosis protruding into the lateral ventricle, with the presence of calcification in the region of the head of the caudate nucleus on the right side; this was the radio-opaque area noted in the skiagram. Dr. Grieve also showed a specimen of the kidneys to demonstrate the multiple tumour formation; histologically the tumours were fibromyomatous.

Dr. Grieve said that he had shown these specimens to illustrate a rare form of cerebral sclerosis which could be diagnosed clinically only by the presence of *adenoma sebaceum*.

Fibrocystic Disease of Bone.

DR. D. OFFICER BROWN showed two patients with localized fibrocystic disease of bone and one patient with the generalized disease. He drew attention to the following points in connexion with the localized disease: (i) rapid union after fracture through the cyst (in Dr. Brown's experience, in children, fracture did not result in healing of the cyst); (ii) local regeneration around the fracture; (iii) the inherent tendency to extend along the bone; (iv) the hard fibro-osseous wall containing brownish fluid only; (v) ridges and depressions in the wall, giving a trabeculated appearance in the skiagram. Dr. Brown outlined the treatment adopted and stated that simple crushing and insertion of a graft were often followed by extension along the shaft, and that subperiosteal local excision was probably the best treatment. This could be carried out either by nibbling the fibrous lining away till normal bone was reached in all directions and firmly embedding the graft, or by block resection of portion of the shaft, followed by the insertion of a well-fitting tibial graft.

Dr. Brown's first patient, aged twelve years, suffered from localized fibrocystic disease of the humerus. The patient came under Dr. Brown's care when, in May, 1932, a fracture occurred through the cyst. The fracture healed rapidly and, though in October, 1932, there was some consolidation in the cyst, by December 13, 1932, definite extension of the disease with a resemblance to the appearance of a giant-celled tumour could be demonstrated radiologically. The child was admitted to hospital on January 8, 1933, and at operation the cyst was exposed and found to be partially curled in. A well-fitting tibial graft was inserted and convalescence was uneventful. On February 7 the graft was in good position; but no consolidation had taken place. By March 28 the bone was a little more dense, as if regenerating, and by April 30 the bone was definitely consolidating and the graft was still dense. On August 15, 1933, it was noted that, though the bone was increasing in density cranially, it was getting more cystic lower down. These findings were confirmed by skiagrams on October 31 and April 26, 1934, and by September 17, 1934, the bone appeared to be almost normal in the upper part; but the lower portion was still cystic, and in December, 1934, a further extension of the cystic area was observed. On April 1, 1935, the patient was admitted again for operation. The actively cystic portion of the shaft was resected subperiosteally, a tibial graft was inserted and a plaster spica was applied. Total paralysis of all the nerves of the arm followed. Skiagrams on June 4 and July 20, 1935, revealed that bony union had occurred and that regeneration was taking place progressively. The progress of the nerve lesions was slow. On April 29 there was complete motor and sensory loss; but on the following day there was a little return of movement and sensation—epicritic, protopathic and power of localization. By May 7, 1935, sensation had improved and movement increased. Massage was commenced a week later. By June 18, 1935, sensation was fairly normal and power was returning rapidly, and on August 6 the arm was a good strong one with normal sensation and no apparent limitation; movements of the shoulder, elbow, wrist and hand were all full and strong.

The other patient with localized disease was a boy, aged fourteen years, in whom the lower end of the radius was affected. He had a fracture through the cyst on February 27, 1931, and firm union and good function were obtained by March 31, 1931. It was seen in a skiagram on August 7, 1931, that bone sclerosis had increased at the site of the fracture; but no extension of the cystic condition was discernible, either then or in later skiagrams taken on November 10, 1931, and July 10, 1932. On November 24, 1933, however, though further improvement had taken place in the distal end, the cystic condition had extended proximally, and progressive extension had occurred, as demonstrable in skiagrams on October 5, 1934, and April 26, 1935. He was admitted to hospital on May 6, 1935, when Dr. Brown performed subperiosteal resection of the fibrous cyst wall, nibbling it away extensively, leaving a mere bridge of bone, which seemed to be normal. A tibial graft was inserted and plaster was applied. By June 10 the graft was shown to be still in good position and the plaster was removed, and by July 19 the graft was seen to be merging into the surrounding bone. Good regeneration resulted and the arm recovered its strength.

Dr. Brown's third patient was a boy, aged five years, who had come under observation first on November 20, 1933, with a fracture of the shaft of the right humerus. Radiological investigation disclosed fibrocystic disease with pathological fracture. His general condition remained good; but multiple cystic areas were present in all the long bones. The blood did not react to the Wassermann test. Chemical investigations revealed the blood calcium content to be 11·0 milligrammes, blood phosphorus content 3·5 milligrammes and blood cholesterol 120 milligrammes per 100 cubic centimetres. It was estimated that the amount of calcium passed in the urine was 0·08 gramme per day.

Familial Osseous Dystrophy of Morquio.

Dr. Brown also showed two female children, aged fourteen years and eleven years respectively, who were the subjects of familial osseous dystrophy. These cases were reported by Dr. Brown and Dr. Colin Macdonald in *The Australian and New Zealand Journal of Surgery*, July, 1933.

The Operative Treatment of Hammer Toe.

Dr. Brown also showed two children upon whom he had operated for the relief of hammer toe. One was a girl, aged thirteen years, who for a long time had suffered from painful hammer toe. Prior to operation there were acute flexion of the distal interphalangeal joint of the second toe and a painful cornified area on the dorsum of the foot. Splints were used for several months without any improvement, and on June 10, 1935, Dr. Brown performed Higgs's spike operation, and an excellent functional result was obtained.

The other patient was a girl, aged thirteen years, who had had pain in the middle toe of the right foot from early infancy, with the development of acute flexion of the distal interphalangeal joint, a painful cornified area on the dorsum of the foot, and an ingrowing nail of the great toe. No improvement resulted from splinting, and on February 25, 1935, Dr. Brown carried out the Higgs's spike operation with division of the flexor tendons, and took a wedge of nail, nail-bed and distal phalanx from the great toe. The functional result was satisfactory.

NOMINATIONS AND ELECTIONS.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Bennett, Ronald Salomon, M.B., B.S., 1933 (Univ. Sydney), Maclean.

Brent, Richard Hillier, M.B., B.S., 1933 (Univ. Sydney), 12, Wylde Street, Potts Point.

Saunders, Corrie, M.B., B.S., 1936 (Univ. Sydney), Sydney Hospital, Sydney.

White, Mervyn McAuley, M.B., B.S., 1935 (Univ. Sydney), 324, New Canterbury Road, Dulwich Hill.

Post-Graduate Work.

POST-GRADUATE COURSE IN ADELAIDE.

THE Adelaide Permanent Post-Graduate Committee announces that the seventh annual post-graduate course will be held during the week commencing May 25, 1936. The course will consist mainly of practical demonstrations wherever possible, and the subjects to be discussed include: œdema and treatment, hæmorrhagic disease, infections of

the hand and its surgical anatomy, fractures of the long bones and their treatment, present views on radiation treatment of cancer and results, gastro-enteritis, limp in childhood, developmental defects, intravenous therapy, demonstrations in ante-natal and obstetrical work and in ophthalmoscopy.

During the week the Edward Stirling Lectures will be given by an interstate physician, and the members attending the course will have the opportunity of hearing the Listerian Oration by Professor Hicks.

The full programme will be sent before the end of the month to all members of the British Medical Association in South Australia and will be published in detail in the journal in a later issue.

Correspondence.

A DIAGNOSTIC CURIOSITY.

SIR: The following extract from the "Medical Column" of a Melbourne weekly paper may be helpful to any of your readers confronted with a similar diagnostic problem:

> (1626) "Rosewood" (Windsor) has suffered with a bad back for years, and in the summer time perspires very freely. Some time ago, after a lot of unaccustomed horse-riding, she noticed a lot of frequency of micturition and also a profuse irritating discharge. She had been told she had V.D., but all tests were negative. She is 58 years of age.
>
> You are probably suffering from some chronic irritation of your prostate organs, and need a complete examination. I received your stamped addressed envelope, and have sent you an address.

Yours, etc.,

C. H. DICKSON.

Medical Society Hall,
Albert Street,
East Melbourne, C.2,
February 6, 1936.

CONTRACEPTION.

SIR: Judging by the report of the Adelaide meeting held in last November, Dr. Marie Brown is to be congratulated on a most excellent discussion of contraception.

There is little doubt but that, in the near future, and despite present-day religious and pseudo-moral objections, knowledge of the best contraceptive methods will be made freely available to those who require it. It is obvious that adequate contraception is preferable to the hole-and-corner practice of abortion which is so prevalent, but it is no less important to realize that unsuitable preventive measures are used more often than not, and are undeniably harmful both physiologically and psychologically.

To comment briefly upon Dr. Brown's address.

The condom is a physical and psychic atrocity which should have only a very limited use. I very much doubt if there is any such thing as a "safe period".

Douching is quite reliable in all but a few cases, but must be carried out immediately after coitus, may lead to chemical irritation and absorption, and does disturb the very necessary psychic relaxation consequent upon mutually satisfactory intercourse. Warm water, with or without the addition of sodium chloride (8%) or vinegar (2·5%), forms a good spermicide, but as an habitual procedure douching is not to be recommended.

Intrauterine or intracervical contrivances, such as the von Gräfenberg ring, collar-bone, sterilett and fruchtelet, must be most emphatically condemned, being unreliable in action, liable to cause irritation and channels for infection.

Of mechanical devices, the Mensinga occlusive pessary is undoubtedly the best, but it should have a narrow steel rim, and the rubber of the dome should be of a specially prepared and much thinner variety than is customarily used. It is immaterial whether this pessary is inserted with the convex up or down, but vaseline must not be used as a lubricant. A 2% lactic acid jelly is a suitable substance for this purpose and is also spermicidal. There are, however, many women and men who have a deep-seated objection to any rubber appliance of this nature. For them a jelly or foaming tablets should be prescribed.

There are several very satisfactory foaming tablets, but they cannot safely be used by frigid women with deficiency of coital "vaginal" secretions, otherwise they may remain incompletely dissolved in a "dry" vagina. Two tablets should be used and should be slightly moistened before introduction. Jellies are especially suitable for the above-mentioned type of case, and the desideratum would appear to be a foaming jelly of the "Permfoam" type. These foaming jellies are apt to be defective in keeping properties, but when fresh their efficiency is undoubted. Some years ago, in collaboration with a chemist, I made a foaming jelly experimentally which seemed to fulfil every contraceptive requirement, but which, possibly for lack of suitable containers, would not remain effective for more than three months. Incidentally, it is a most unhygienic, if cheap, practice to market any kind of jelly in collapsible tubes holding more than one application. The ideal is a foaming jelly in a single unit tube with an individual celluloid or tin nozzle.

Regarding endocrinological contraception, I first heard it mentioned by Hastings Tweedy at the Rotunda, Dublin, nearly twenty years ago, when the hypodermic injection of spermatozoal emulsion was discussed. The recent work of M. J. Baskin (*American Journal of Obstetrics and Gynecology*, December, 1932) shows that this may be practicable. Baskin injected, intramuscularly, twenty women with 12 to 15 cubic centimetres of spermatozoal fluid—three weekly injections of four to five cubic centimetres each. There was no untoward reaction and Baskin claimed that definite immunity was produced for a year in nineteen out of the twenty women.

Coitus interruptus, although frequently employed, is to be deprecated. It is a practice that entails psychological and physiological deprivation and may be used with comparative impunity, and then only occasionally, if both partners are of an insensitive bovine temperament. It has been stated by Freud and other psychoanalysts in the earlier days of psychoanalysis that it causes anxiety-neurosis, and while this may not be true always, interrupted coition is often an active psychopathogenic factor when performed habitually by even mildly neurotic persons.

Finally, two points should be mentioned. It should be borne in mind that in chemical contraception it is not so much the direct spermicidal action of strong chemicals that achieves results, as the disturbance of the normal pH value of 4·5 of the vaginal content. As a matter of fact, this hydrogen ion concentration is often considerably altered in rheumatic and gouty subjects, who occasionally develop a natural contraceptive capacity in consequence. Lastly, advice given on contraception should be strictly individual, and the adoption of a particular technique should have due regard to such factors as age, temperament, previous pregnancies, anatomical and physiological conditions and psychological reactions.

Yours, etc.,

E. HASLETT FRAZER.

231, Macquarie Street,
Sydney,
February 13, 1935.

A DISCLAIMER.

SIR: In a weekly journal, published during the week, an article appeared mentioning my name. This appeared without my knowledge or permission.

Yours, etc.,

V. M. COPPLESON.

225, Macquarie Street,
Sydney,
February 14, 1936.

A WARNING.

SIR: I desire to draw the attention of your Council to the activities of a morphine addict who is causing a considerable amount of annoyance to medical practitioners in southern Queensland.

This man poses as a squatter from the Rockhampton district who has suffered for many years from severe attacks of renal colic, and his clever acting is worthy of a better cause.

He is about thirty-five years of age, dark, and of medium height, and speaks with a cultured English voice. His usual procedure is to ask for relief from his intense pain pending an early urological investigation.

Yours, etc.,

Brisbane, January 29, 1936. ELLIS MURPHY.

Obituary.

JAMES THOMPSON.

WE regret to announce the death of Dr. James Thompson, which occurred at Perth, Western Australia, on January 21, 1936.

THE STAWELL MEMORIAL FUND.

THE undermentioned additional subscriptions have been received for the Stawell Memorial Fund:

£25: Lady Stawell.
£5 5s.: A. E. Rowden White, F. Maclure.
£3 3s.: J. Jona, L. S. Latham, R. H. Fetherston.
£2 2s.: B. T. Zwar, Beatrice Warner, A. J. Opie, J. S. Ormond, D. G. Croll, J. G. Haydon.
£1 1s.: J. L. Diggle, W. N. Robertson, K. Inglis, S. E. Francis, J. M. Andrew, S. O. Cowen, T. G. Wilson, A. P. Derham, H. C. Disher.

Diary for the Month.

MAR. 2.—New South Wales Branch, B.M.A.: Organisation and Science Committee.
MAR. 3.—Tasmanian Branch, B.M.A.: Council.
MAR. 4.—Victorian Branch, B.M.A.: Branch.
MAR. 4.—Western Australian Branch, B.M.A.: Council.
MAR. 5.—South Australian Branch, B.M.A.: Council.
MAR. 6.—Queensland Branch, B.M.A.: Branch.
MAR. 10.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
MAR. 10.—New South Wales Branch, B.M.A.: Ethics Committee.
MAR. 10.—Tasmanian Branch, B.M.A.: Branch.
MAR. 13.—Queensland Branch, B.M.A.: Council.
MAR. 16.—Federal Council, B.M.A.
MAR. 17.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAR. 18.—Western Australian Branch, B.M.A.: Branch.
MAR. 24.—New South Wales Branch, B.M.A.: Council (quarterly).
MAR. 25.—Victorian Branch, B.M.A.: Council.
MAR. 26.—New South Wales Branch, B.M.A.: Annual Meeting.
MAR. 26.—South Australian Branch, B.M.A.: Branch.
MAR. 27.—Queensland Branch, B.M.A.: Council.
MAR. 31.—New South Wales Branch, B.M.A.: Council (Election of Office-Bearers and Appointment of Standing Committees).

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xiv and xv.

CHILDREN'S HOSPITAL, CARLTON, VICTORIA: Medical Officers.
MOOROOPNA HOSPITAL, MOOROOPNA, VICTORIA: Junior Resident Medical Officer.
SAINT VINCENT'S HOSPITAL, MELBOURNE, VICTORIA: Honorary Officers.
WOMEN'S HOSPITAL, CARLTON, VICTORIA: Medical Superintendent.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Richmond District Hospital, North Queensland. Members accepting LODGE appointment and those desiring to accept appointments to any COUNTRY Hospital, are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

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